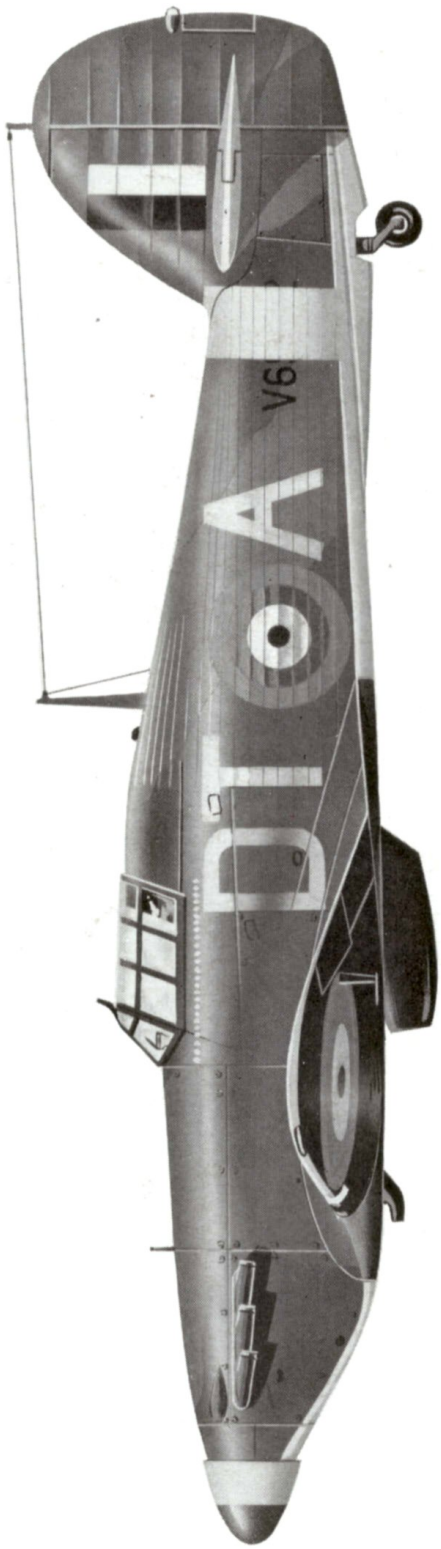
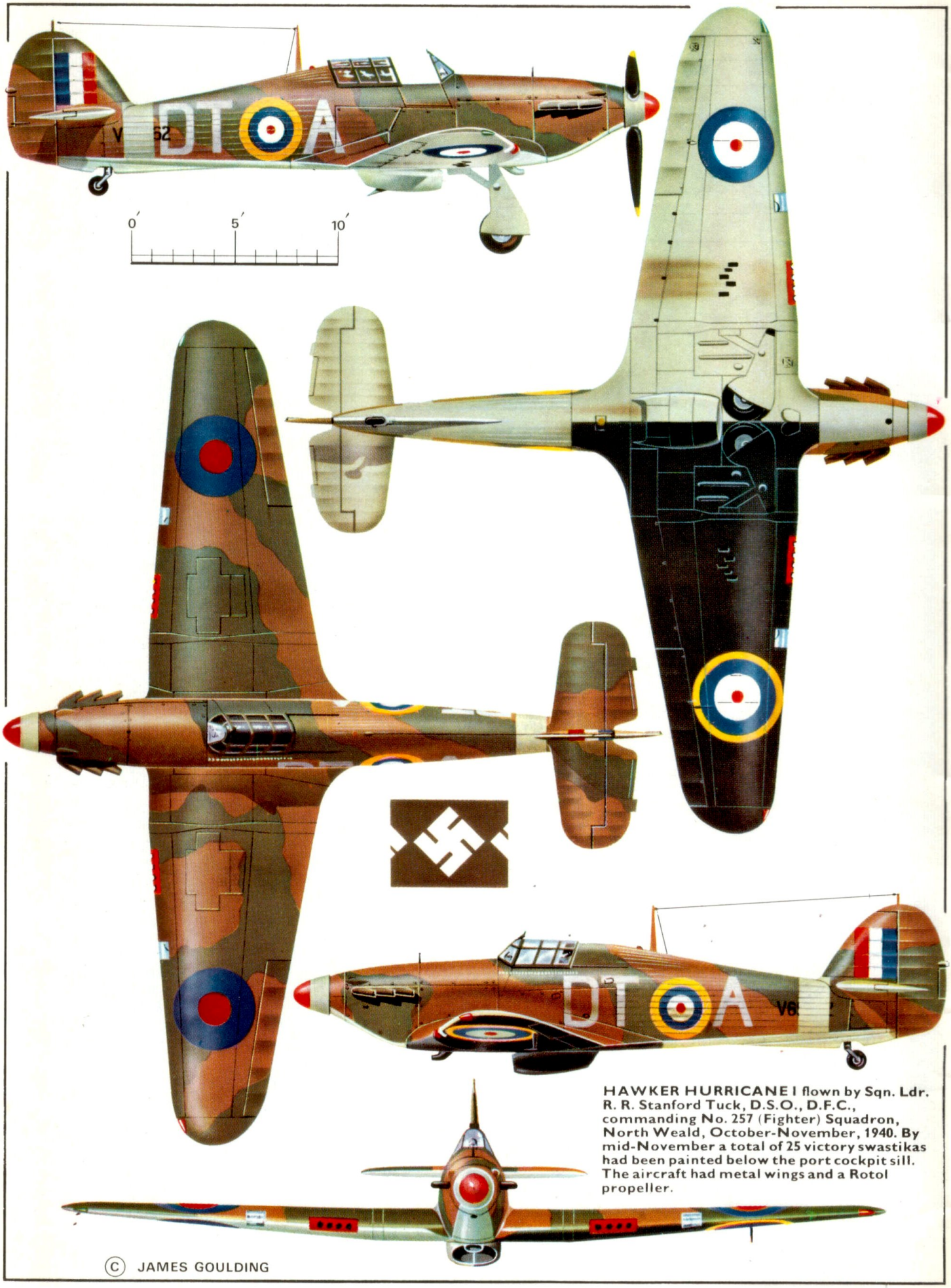
PROFILE
PUBLICATIONS

The Hawker Hurricane I

NUMBER 111
TWO SHILLINGS





HAWKER HURRICANE I flown by Sqn. Ldr. R. R. Stanford Tuck, D.S.O., D.F.C., commanding No. 257 (Fighter) Squadron, North Weald, October-November, 1940. By mid-November a total of 25 victory swastikas had been painted below the port cockpit sill. The aircraft had metal wings and a Rotol propeller.

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The Hawker Hurricane I

by Francis K. Mason

Sqdn. Ldr. R. R. Stanford Tuck, D.S.O., D.F.C., in Hurricane I, V6962, *leading Sgt. Barnes* (V6873, *aircraft* DT-0) *and Plt. Off. Pniak* (V7137, *aircraft* DT-G) *of No. 257 Squadron in a take-off from North Weald in November 1940. Tuck's aircraft is the subject of the general arrangement drawings opposite. It was on 11th November 1940 that No. 257 Squadron rose to intercept the sole major raid upon Britain by the Belgian-based* Corpo Aereo Italiano—*though Tuck himself was absent on leave at that time.*
(Photo: Imperial War Museum, Neg. No. CH1928)

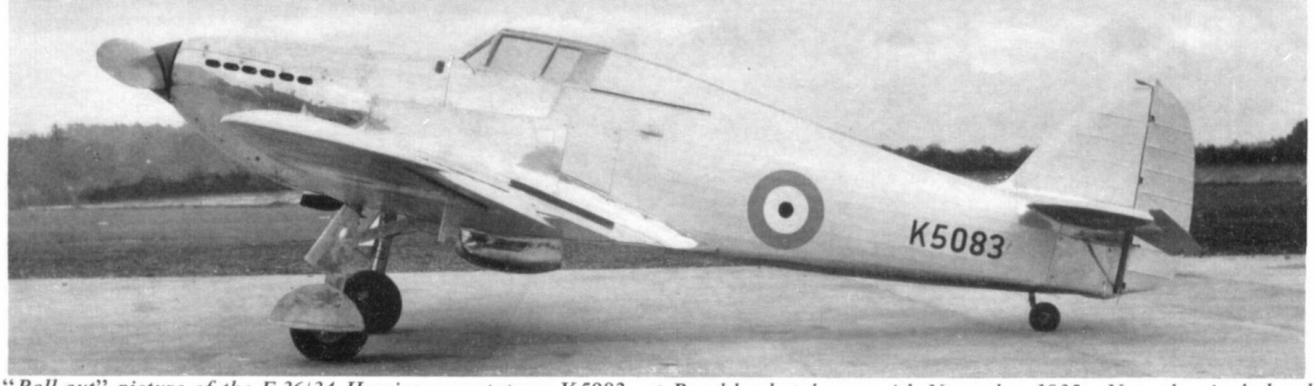
Kenley, 4th September 1940. Nine Hurricanes took off from Kenley at 13.05-13.10 hrs. to patrol base and Croydon at 8,000 feet. They were flying Squadron Vic formation when they sighted twenty Bf 110s about to attack Brooklands aerodrome. Leader turned the formation ninety degrees to starboard and in shallow Vic dived to the attack out of the sun from about 12,000 feet. Flt.Lt. Cambridge, leading the formation, attacked an enemy aircraft from the beam and above expending all his ammunition in one long burst and saw the target's port engine catch fire. Blue One followed it down and saw it crash in flames in a field. Blue Two (Plt.Off. Samolinski) attacked another and observed a fire in the cockpit, after which the enemy aircraft turned and went into a dive. Green Two (Sgt. Dredge) attacked a Bf 110 from thirty degrees above and to the rear, giving a ten-second burst while closing from 300 down to 25 yards. Both engines caught fire and a red glow was observed in the cockpit; the enemy was seen to dive straight down and burst into flames (confirmed by Red One). Green Three (Plt.Off. Novak), after attacking a Bf 110, observed smoke coming from the fuselage, after which the enemy dived and crashed. Red One (Flt.Lt. Wedgewood) succeeded in getting on the tail of a Bf 110 and fired a ten-second burst from 250 yards to point blank range. The enemy caught fire, climbed steeply for a second before falling to crash in a wood. Red Two (Plt.Off. Corkett) attacked a Bf 110 which was flying on the starboard side of the enemy Vic; after two bursts the enemy broke formation, climbed 500 feet, turned over on to its back and dived straight down and exploded in a field. Red Three (Sgt. Kee) delivered a head-on attack on a Bf 110 from slightly below and from 250 yards closing to 50 yards, firing 1-2 second bursts. Small pieces ripped off the fuselage and tail. Blue Three (Sgt. Innes) and Green One (Fg.Off. Watts) silenced the rear gunners of two Bf 110s. Nine Hurricanes landed at Kenley 13.55 hrs. Our losses: Nil. Enemy casualties: Six Bf 110s destroyed; one damaged. . . . Squadron Operations Record Book, No. 253 (Fighter) Squadron.

When Adolf Hitler was hatching his first tangible plots for political supremacy in 1933, the World was stirring in uneasy slumber. Nothing was more abhorrent to the "peaceful" nations than military preparation, while economic chaos was still only a few months past. But the Disarmament Conference had proved to be the prototype of subsequent fiascos, and even Britain had at last lost faith in her arbitrary Ten Year Rule. And yet there was scarcely a politician in London who would trade his popular image for a conviction that he should support increased expenditure on the Nation's defence.

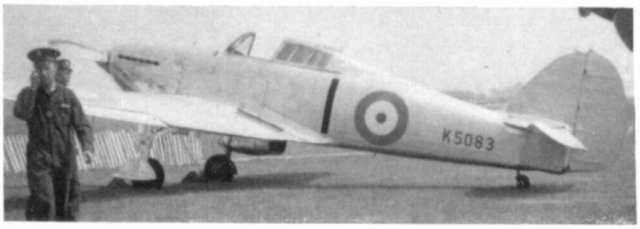
Britain's air defence was vested in a small number of fighter squadrons equipped with biplanes whose capabilities were realised by a few as having reached their zenith and which could not be bettered without fundamental and very costly advances in technology. Not that the direction which these advances should take were not recognised, but the adoption of the monoplane fighter was the prejudicial *bête noire* of an age-old generation of Air Staff officers whose military apprenticeship had been served on horseback or in dreadnoughts, who quite likely believed that the Schneider Trophy was awarded to the winner of a French horse race—yet who ruled the roost in Whitehall.

History has recorded that it was the liaison that existed between Officers of middle rank and the industrial technicians that brought about the necessary advance in technology to sire the R.A.F.'s monoplane fighters. Technical civil servants of moderate seniority encouraged Camm and Mitchell to discuss their ideas—Britain in 1933 held deep-rooted suspicions of Churchills and Beaverbrooks.

The earliest recorded discussions about a "Fury Monoplane" were held between Sydney Camm and



"Roll-out" picture of the F.36/34 Hurricane prototype, K5083, *at Brooklands taken on 4th November 1935. Note the single hood stiffener, the short radiator-bath, the mainwheel "D"-doors, the tailplane strut and the absence of radio installation and mast.*
(Photo: Hawker Aircraft Limited, Neg. No. 52K)



K5083 *in the Experimental Aircraft Park, Hendon, 1936. Note the display number "1" on fuselage.*
(Photo: via John W. Caler)

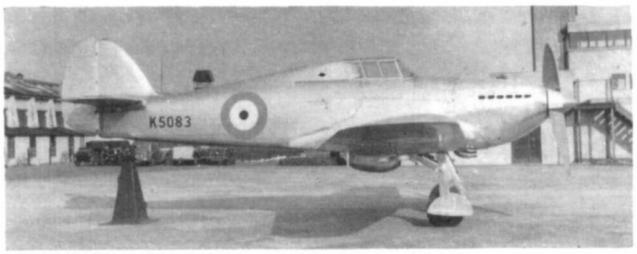
Major Buchanan of the D.T.D. in August 1933, yet it was not until late the following year that an officially-sponsored Specification, F.36/34, was issued to cover R.A.F. demands. It was the result of discussions with Sqdn. Ldr. R. S. Sorley (later Air Marshal Sir Ralph Sorley, K.C.B., O.B.E., D.S.C., D.F.C.) that Camm and Mitchell packed the wings of their fighters with eight free-firing machine guns in place of the traditional pair of nose-mounted synchronised guns. Only when the prototypes were well advanced and their potentialities obvious were any efforts made to organise the haphazard expansion of British air defences, for large production contracts for biplane fighters were still being awarded !

The prototype Hurricane, *K5083*, was manufactured at Kingston (originally mocked-up with fuselage-mounted Vickers guns) during 1935 was moved to Brooklands on 23rd October for final assembly and first flown by Flt. Lt. P. W. S. ("George") Bulman on 6th November.

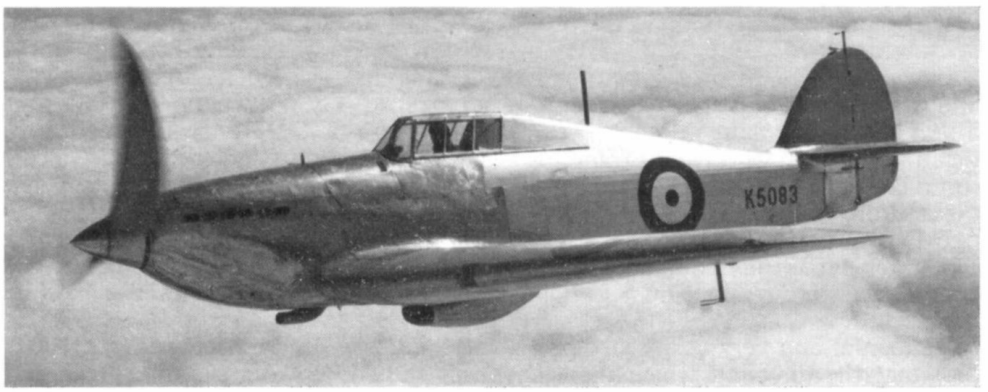
All went well for the first few flights within the rather severe limitations imposed upon the new Merlin "C" engine. After all, it *was* a new engine—intended to develop over 1,000 h.p., yet developed from the 600 h.p. Rolls-Royce Kestrel of nearly ten years' standing. In fact, when *K5083* first flew, the Merlin C had not even achieved full flight certification (and had actually failed to do so some months before). Moreover that first Hurricane engine (No. 11) suffered partial failure in the air on December 16th, fortunately without damage to the prototype.

However in four months and ten flying hours Bulman covered all important regions of the flight envelope and the aircraft was delivered to Martlesham Heath for its initial service handling trials, which were conducted under the direction of Sqdn. Ldr. D. F. Anderson, D.F.C., A.F.C. Despite considerable troubles with the engine (supercharger bearing failure, broken valve springs and automatic boost control capsules collapsing, necessitating two engine changes in one week), the aircraft emerged from the trials with enthusiastic reports. Performance figures achieved included a maximum level speed of 315 m.p.h. at 16,200 feet and a climb to 15,000 feet from take-off in 5·7 minutes. Landing flaps, which at that time extended across the underside of the fuselage, bestowed a stalling speed of 57 m.p.h.—only marginally greater than that of the Gladiator biplane. The undercarriage, whose retraction proved something of a novelty, was complimented for its robustness, though the D-doors covering the wheels suffered damage while taxying over rough ground and were eventually removed.

As development of the Merlin progressed in 1936, confidence in the new fighter mounted, and, in the absence of official support, the Directors of Hawker Aircraft authorised the transfer of design drawings to



Above: K5083 *ballasted for initial Service trials in 1936, seen at Brooklands after addition of wireless equipment and extra hood stiffener.*
(Photo: Hawker Aircraft Limited, Neg. No. 87K)



Right: *In-flight view of* K5083 *after removal of the tailplane strut, installation of armament (note ring-and-bead sight), addition of wireless mast and adoption of production-type convergent-divergent radiator fairing. These modifications were carried out for the 1937 Martlesham Heath Full Service Trials.*

The first production Hurricane I, L1547. The film used caused the yellow outer ring of the fuselage roundel to appear darker than the blue, and the serial number on the rear fuselage is almost invisible. Note the early "kidney" exhaust stubs and the flight instrument venturi below the windscreen.
(Photo: Hawker Aircraft Limited, Neg. No. 32/2)

the Production Design Office and tooling for the series manufacture of 1,000 airframes, commencing in March that year. Justification for this venture materialised in June with an Air Ministry contract for 600 aircraft—now officially named Hurricane—yet it is interesting to reflect that the three months separating those two actions may have been vital to Britain, for when one records that Hurricane production in 1940 was running at a total of about 100 machines per month, the extra 300 machines in effect provided strength for an entire Group in Fighter Command !

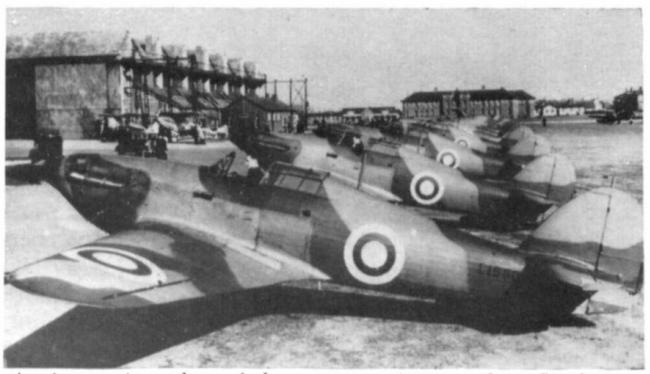
Further Martlesham Heath trials were held during the latter half of 1936 and again in 1937; further troubles with the Merlin C led to the decision to abandon this version in the fighter context (most Merlin I's thereafter being allocated to the less rigorously-used Fairey Battle and Hawker Henley). The decision to replace the Merlin I with the Merlin II however imposed severe delays and resulted in production design of completely new nose contours. This in turn delayed production deliveries by about six months, Flt. Lt. Philip Lucas piloting the first production Hurricane I on 12th October 1937. Events moved quickly thereafter and within six weeks sufficient Hurricanes were delivered to Northolt to equip one flight of No. 111 (Fighter) Squadron, commanded by Sqd. Ldr. John Gillan.

INTO THE R.A.F. AND THE HEADLINES

Over the past two years years much had been made of the forthcoming introduction of monoplane fighters to the R.A.F.'s new Fighter Command. By February 1938 No. 111 Squadron had received sixteen Hurricanes and its C.O. determined to draw the public's attention to his new fighters' performance capabilities, and in flying from Turnhouse (Edinburgh) to Northolt (London)—a distance of 327 miles—at an average ground speed of 408·75 miles per hour, succeeded in not only providing exciting breakfast literature the following day, but acquiring the nickname "Downwind" Gillan for all time.

Two more squadrons received Hurricanes before

A 111 Squadron Hurricane of early 1938 vintage.
(Photo: Flight, Neg. No. 16109)

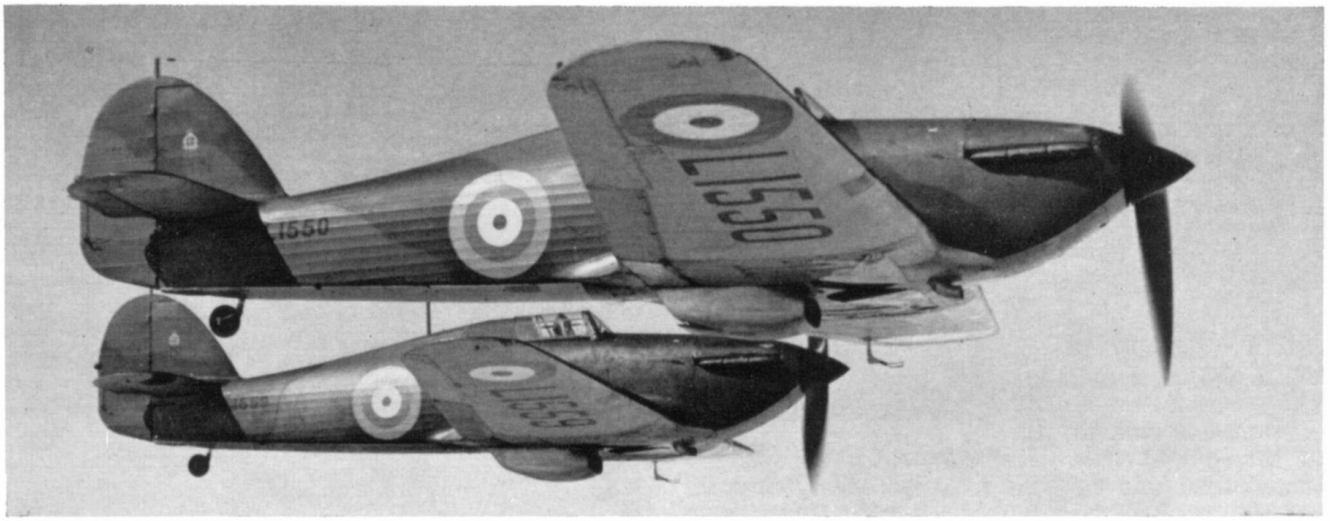


An interesting photo (whose source is unexplained) showing Hurricanes of No. 111 (Fighter) Squadron lined up at Northolt in January 1938. Squadron badges have not yet been applied to the fins, and "A" and "B" camouflage schemes are visible along the line. In the left background can be seen a Gauntlet and Hart G-ABMR, the latter aircraft then used for ferrying Company pilots and air-to-air photography, and still flying in 1966.
(Photo: U.S. Navy Department, Neg. No. 80-CF-4927/1, courtesey of Naval Aviation News)

the Munich Crisis of Autumn 1938; No. 3 Squadron, at Biggin Hill, received its aircraft in time to spend the summer months working up, but No. 56 was still listed as non-operational in September that year. Meanwhile a number of modifications had been introduced as a result of early experience with Service aircraft; spinning trials at Farnborough and Martlesham had shown that the rudder was shielded in the spin with the result that recovery was slow, and a ventral fin was added to assist the air-flow around the bottom of the rudder. The tailwheel had been fixed on production aircraft and this was now neatly faired within the underfin. Some trouble had been experienced with exhaust flashing—especially during night flying—and the first of a series of modified exhaust stub designs were introduced, culminating in ejector stubs which were said to impart some small component of thrust.

Other alterations to the Hurricane I design were of greater significance. The fabric-covered wing had been an expedient adopted to accelerate production and had, basically, been patterned from the traditional Hawker biplanes. The Kingston office had however been at work on a stressed-skin metal wing and this was ready for flight trials before the end of 1938. It was not however introduced into the production lines until well on into 1939, many of the older L-Series aircraft being retro-fitted.

Altitude performance of the "old wooden-bladers" was something of a disappointment, especially in comparison with the known benefits of variable-pitch Hamilton-screwed fighters which, after all, had



In-flight picture of 111 Squadron Hurricanes, 1938. Note fin badges. (Photo: Flight, Neg. No. 15586S)

been flying in America for some years. De Havilland had secured British manufacturing rights on this propeller and an early Hurricane I, *L1562*, was so fitted for trials in 1938. Parallel with this development was the all-British Rotol design which was in many respects superior. Whereas the D.H.-Hamilton, by virtue of variable pitch, bestowed good altitude performance, the Rotol went further in providing "constant speeding", thereby considerably reducing engine wear during dives. The Rotol design—developed from the Hele-Shaw of the nineteen-twenties—came to fruition at about the outbreak of War in 1939 and undoubtedly provided the Hurricane with a much-needed performance restorative during the Battle of Britain.

Many other trials were conducted on pre-War Hurricanes, including slotted wings on *L1696*, pure water cooling in *L1856*, twin 20 mm. guns in *L1750*, and dazzle paint on *L1582*. None of these experiments led to adoption *per se*, but provided useful experience, benefitting later developments.

While the R.A.F. accelerated its introduction of the Hurricane, the British Government had sanctioned limited export of the fighter to nations with favourable sympathies. Throughout the nineteen-thirties Hawker had fostered thriving business in Yugoslavia with Furies and Hinds; at the first opportunity, an ex-R.A.F. machine was sent to Belgrade for evaluation and was followed by an order for twenty-four Mark I's. Later still, production licences were awarded to the P.S.F.A.Z. Rogozarski plant at Belgrade for the manufacture of forty aircraft, and

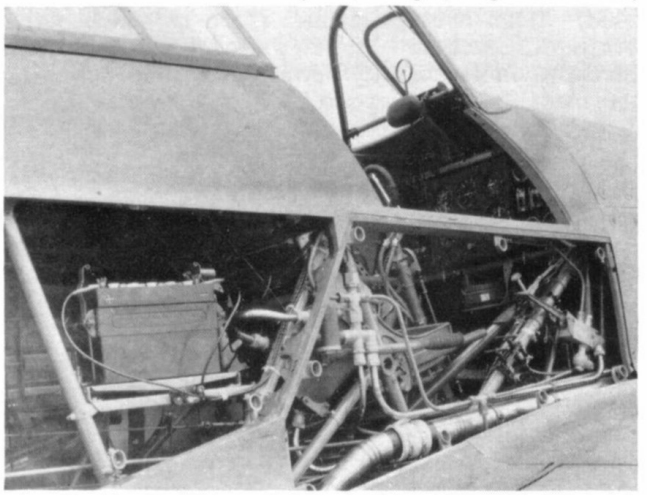
Going aboard a No. 111 Squadron Hurricane at about the time of the Munich Crisis; just visible are the newly introduced ejector exhaust manifolds on the left, and the red-and-blue fuselage roundel on the right. (Photo: F. K. Mason collection)

A somewhat over-posed picture of an early Hurricane in the finishing shop. It does however illustrate the relative positions of glycol header tank, leading edge oil tank, and fuselage and wing fuel tanks, as well as the marked increase in structural complication that accompanied the introduction of the first monoplane fighters.

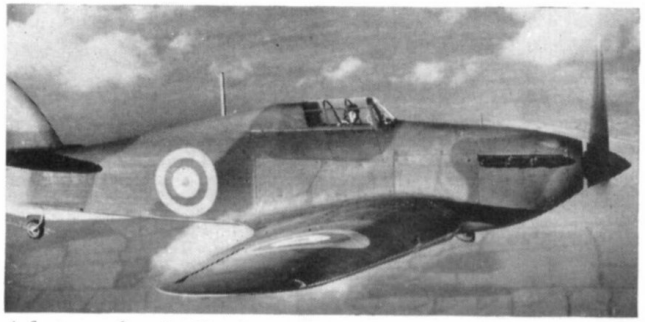
(Photo: Topical Press Agency Ltd., Neg. No. T5090)

Intimate view of Hurricane midships. Noteworthy among all the plumbing are the flap and undercarriage operating levers—in those days on the starboard side of the cockpit—and hydraulic hand-pump. Warning notices state "Buzzer warning, wheels not locked down; red (lights) indicate wheels locked up, green indicate wheels locked down", another quaint reminder that retractable undercarriages were still new to the R.A.F. in 1938! Other characteristics of a by-gone age are the ring back-sight on crash-pad and the injunction not to lower wheels or flaps at speeds in excess of 120 m.p.h.

(Photo: Flight, Neg. No. 15712S)



No. 111(F) Squadron Hurricane I's at Northolt in July 1938 displaying varigated unit numerals aft of the fuselage roundels. The C.O.'s aircraft, fourth from the camera (L1555), *carried plain white numerals.* (Photo: via W. Richards)



A feature of early Hurricane I's was the thrust tolerance on the propeller shaft which resulted in a considerable "gap" between airscrew and nose cowling. On later aircraft a flanged plate was fitted on the nose thereby concealing the space. Note that this aircraft is one of the early machines fitted with the ventral fin, introduced in mid-1938. (Photo: F. K. Mason collection)

sixty at the *Fabrika Aeroplana I Hidroplana* factory at Zemun. Fewer than twenty of these indigenous aeroplanes had however been delivered to the R.Y.A.F. when the *Luftwaffe* launched its attack on 6th April 1941. One such aircraft deserves particular mention here, for, fearful of a disruption in the supply of Merlins, the Ikarus plant at Zemun carried out a conversion of one Hurricane to be powered by a 1,050 h.p. Daimler-Benz DB601A, but, though this version drew praise from the Yugoslav pilots, there was no time to effect series production of the variant.

South Africa was the next overseas country to negotiate purchase of Hurricanes and a number of ex-R.A.F. aircraft was shipped out in December 1938 for assembly at Durban and subsequent issue to No. 1 Squadron, S.A.A.F. at Pretoria.

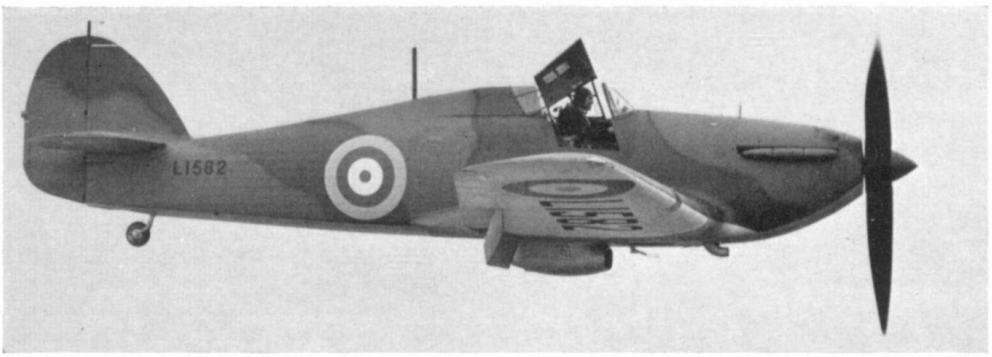
Also in December 1938, Rumania placed an order for twelve Hurricanes and although these were in transit at the time of the outbreak of War, it is not known whether they ever took part in hostilities. Persia's order for eighteen Hurricane I's was also affected by the outbreak of War, only two aircraft (*L2079* in 1939 and *P3720* in 1940) being shipped; the remainder was cancelled and their place taken by Mark II's after the War. Poland ordered one Hurricane for evaluation, with an option on a further nine; records show that only the first, *L2048*, arrived at Stettin, and although the option on the nine was taken up, the consignment was diverted to Gibraltar and the Middle East.

Turkey was more fortunate in that all fifteen Hurricanes on its contract were shipped and received, despite a passage through the Mediterranean during the first two months of the War.

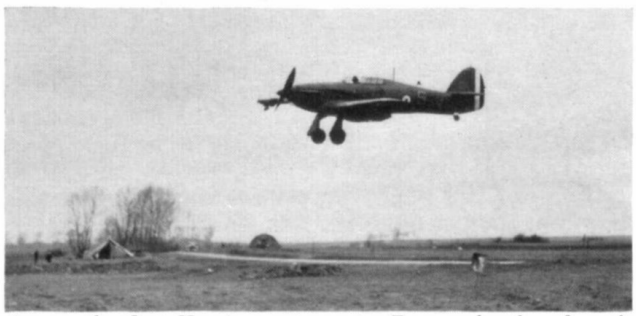
Belgium's Hurricane programme was substantial for, apart from an order for 20 parent-built Mark I's (ex-R.A.F. contract), licences to build a further eighty were awarded to Avions Fairey (*Société Anonyme Belge*). The licence aircraft were to be armed with four 12·65 mm. Colt Browning guns, but in the event only two such aircraft were completed before the German invasion of May 1940. A further fifteen Hawker-built aircraft were at that time on the strength of the *2ème Escadrille* of the *1ère Group* of the *2ème Regiment de Chasse* at Diest. It was probably this squadron that was encountered by Adolf Galland on 12th May 1940 near Liège and Tirlemont.* By all accounts the Belgian pilots were overwhelmed principally on account of their lack of experience on the type in the face of an enemy flushed with many recent victories.

The most far-reaching plans for Hurricane production overseas were those that resulted in large numbers being built at the Fort Williams Works of the Canadian Car and Foundry Company. It is interesting to record that detailed plans for Commonwealth production of British aircraft did not feature in any of the Government Expansion Schemes promulgated in 1935-37, and only academically in

One of many development Hurricanes, L1562 (*the sixteenth production aircraft*) *was used for flight trials of the D.H. Hamilton 2-pitch 3-blade metal propeller in 1938.* (Photo: F. K. Mason collection)



An exciting and somewhat draughty situation came about during a routine test flight in this early Hurricane. The cockpit break-out panel came adrift, wrenching up the canopy. Rather naturally, full flap has been selected to reduce speed and hence the pilot's discomfort.



Among the first Hurricanes to go to France shortly after the declaration of war were those of No. 1 (Fighter) Squadron. Shown here landing at Vassincourt, these early "expeditionary" aircraft were characterised by vertical rudder stripes and deletion of squadron code letters—the individual letter being retained.

(Photo: Imperial War Museum Neg. No. C1241)

1938. The Canadian Hurricane plan was almost entirely a commercially-sponsored (though officially endorsed) project; it was motivated by a belief that Hurricane factories were almost certainly within bombing range of Germany. After the writing on the wall at Munich, Hawker directors completed the preliminary plans to swell production capacity for the Hurricane by opening up a Canadian plant. To begin with a number of sample and pattern aircraft was shipped to Canada together with complete sets of microfilmed drawings; later twenty-two of the original L-Series Hurricanes were sent as initial development aircraft on which to establish training schedules. So well laid were these plans that Canadian-assembled Hurricane I's were arriving in the United Kingdom in time to participate in the Battle of Britain. All told, 160 Canadian Hurricane I's (*P5170-P5209*, *T9519-T9538*, *Z6983-Z7017*, *Z7049-Z7093*, *Z7143-Z7162*) came to be built before redesignation to the Mark X.

Despite the obvious urgency for expansion of the R.A.F. in the last months before the outbreak of World War II, the British Government did nevertheless sanction the export of Hurricanes to "sympathetic" nations. In this picture Philip Lucas is shown flying one of the aircraft ordered by Yugoslavia; prior to delivery, markings were only applied above and below the wings.

(Photo: Flight Neg. No. 17048S)

THE WAR—PHONEY FOR SOME

By 3rd September 1939 a total of 497 Hurricanes had been completed—all by Hawker Aircraft Limited—out of orders thus far placed for 3,500 aircraft (the first Gloster-built aircraft, *P2535*, was not flown until 20th October). Altogether eighteen R.A.F. squadrons had taken delivery of Hurricanes, of which four were auxiliary units; but only fourteen were classed as fully established and operational. 315 Hurricanes were listed at first line strength with a further 107 awaiting final modification clearance; what has seldom been recorded was the astonishing range of different standards of preparation—estimated at twenty-seven. Metal and fabric wings, Watts, D.H. and Rotol propellers, ring and bead sights, reflector sights, Merlin II's and III's—such was the confusing jumble of standards that groundcrews of one Hurricane squadron often expressed themselves at a loss when faced with servicing visiting aircraft from another !

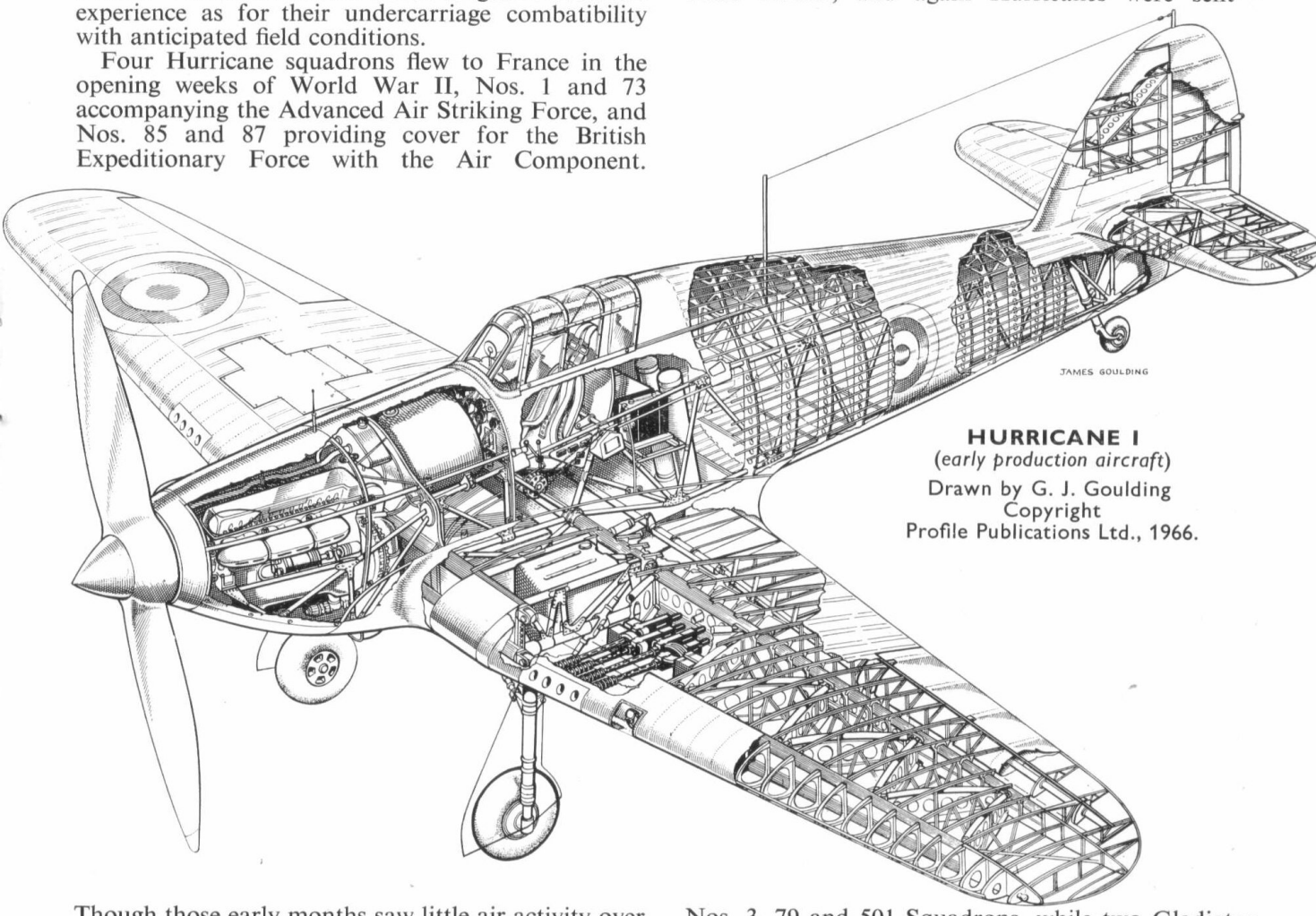
At the outbreak of War, from the squadrons of monoplane fighters available for combat, Spitfires were steadfastly retained for home defence. On the

Two photos of Hurricanes of No. 85 (Fighter) Squadron illustrating the distinctive hexagon fin marking of the unit. The hexagons of "A" Flight "sat on a sharp end", while those of "B" Flight "sat on a flat". Both A and B Camouflage schemes are visible, and the absence of serial numbers is merely attributable to the wartime censor. The photos were taken in France during the winter of 1939-40.

(Photos: Imperial War Museum Neg. Nos. C1156 & F2344C)

other hand, to meet treaty obligations as well as operational requirements, Hurricanes were sent to France—chosen as much for their length of in-service experience as for their undercarriage combatibility with anticipated field conditions.

Four Hurricane squadrons flew to France in the opening weeks of World War II, Nos. 1 and 73 accompanying the Advanced Air Striking Force, and Nos. 85 and 87 providing cover for the British Expeditionary Force with the Air Component.



HURRICANE I
(early production aircraft)
Drawn by G. J. Goulding
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Profile Publications Ltd., 1966.

Though those early months saw little air activity over the Western Front, the Hurricane squadrons won occasional successes against the *Luftwaffe*, but achieved something far more important: they acquired that absolutely vital tactical experience on which two years' air fighting by the R.A.F. was to be based.

The Hurricane pilots of those "phoney" months prior to the débâcle of May 1940 were key men—though at the time they little realised their own importance. "Boy" Mould (who shot down No. 1 Squadron's first victim near Toul on 30th October 1939), "Cobber" Kain of No. 73, Johnny Walker, "Prosser" Hanks, Paul Ritchie, "Ginger" Lacey; these were the pilots who, by their baptism across the Channel, brought back the experience that proved the strength of Fighter Command in the Battle of Britain.

When the blow fell upon the Low Countries on 10th May 1940, the responsibility for bomber escort fell upon the four Hurricane squadrons who then found their relative inactivity transformed into feverish and continuous battle, usually against heavy odds. Some idea of the transformation may be judged from No. 1 Squadron's battle claims which, for the period between the time of its arival in France in 1939 and 9th May 1940, were 26 enemy aircraft destroyed for the loss of 1 pilot, and 114 enemy aircraft destroyed for the loss of 3 pilots during the following fortnight. Such a record (even allowing for a small "enthusiasm" factor) has probably never been equalled, and supported No. 1's motto—"First in All".

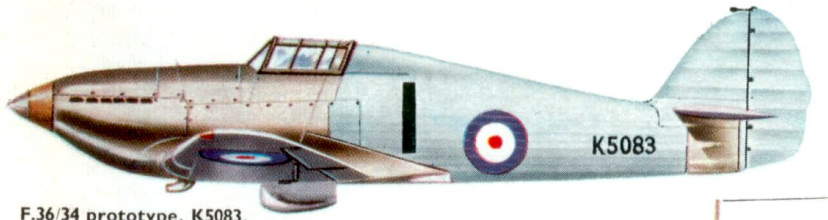
The pressure on the B.E.F. brought reinforcements from Britain, and again Hurricanes were sent—Nos. 3, 79 and 501 Squadrons, while two Gladiator squadrons also received a number of Hurricanes.

The issue in France was not long in doubt as the British forces withdrew to the sea and the great evacuation through Dunkirk commenced. At this point home-based squadrons were thrown into the battle, among them Nos. 32, 213, 229 and 242 with Hurricanes—as well now as Spitfires.

As the remnants of half a dozen hard-pressed Hurricane squadrons sought to extricate themselves from France in June, excursions elsewhere were afoot which conspired to further drain Britain's priceless fighter resources. After the rape of Poland, Nazi Germany invaded Denmark, and on 8th April 1940 went on to attack Norway. Immediate R.A.F. reaction was to send a Gladiator squadron to central Norway—an expedition not blessed with outstanding success due to necessarily haphazard preparation* —but as operations moved northwards better schemes were completed for the return of the Gladiator squadron and the despatch of a Hurricane squadron, No. 46, to Narvik on 26th May.

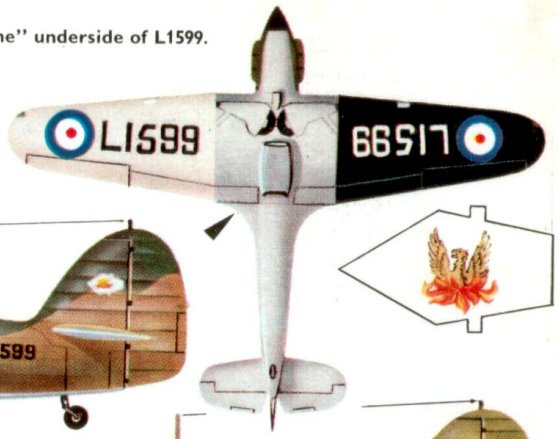
Commanded by Sqdn. Ldr. K. B. B. Cross†, No. 46 Squadron, with its elderly Hurricane I's, was shipped to Narvik aboard H.M.S. *Glorious* and landed nearby at Bardufoss. Several enemy aircraft were destroyed over or near the port, and on 28th May Plt. Off. MacGregor shot down a Ju 88 over Tjelbotn, and two Do 26's were destroyed whilst disembarking

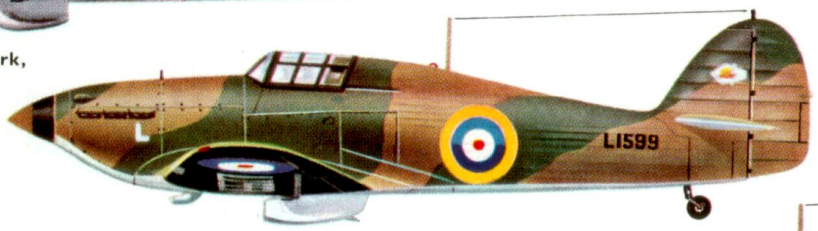
continued on page 12



F.36/34 prototype, K5083, experimental aeroplane park, Hendon, 1936, Watts propeller.

"3-tone" underside of L1599.



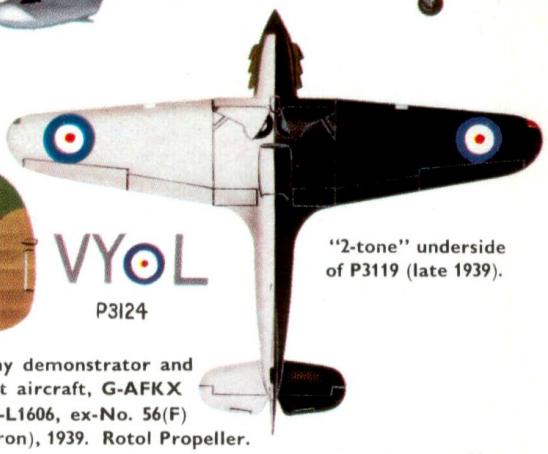


Hurricane I, L1599, No. 56(F) Squadron, 1938. Watts Propeller.

Hurricane I, L1584, of No. 111(F) Squadron, Northolt, displayed at Villacoublay, France. July 1938. Aircraft Watts Propeller.

Hurricane I, P3119 of No. 85(F) Squadron, Air Component, France, 1939. Squadron Commander's aircraft, "B" Flt. tail marking. Watts Propeller.

Fuselage and tail markings of "A" Flt. aircraft, No. 85(F) Squadron.

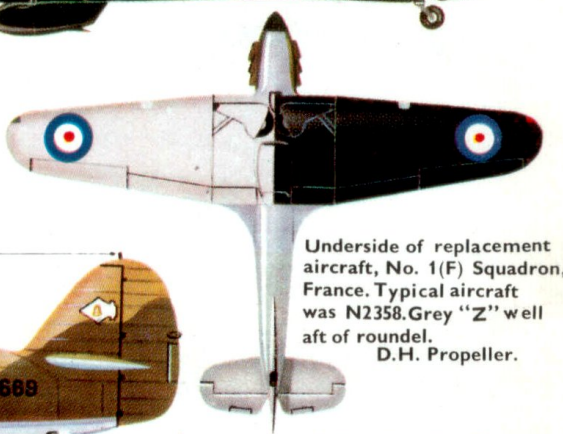


"2-tone" underside of P3119 (late 1939).

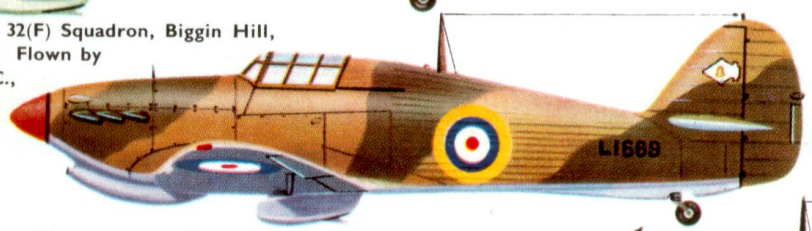
Company demonstrator and test aircraft, G-AFKX (ex-L1606, ex-No. 56(F) Squadron), 1939. Rotol Propeller.

Hurricane I, L1842, of No. 1(F) Squadron, Vassincourt, France, September 1939. Flown by Plt. Off. P. W. O. ("Boy") Mould, shot down Do 17, Toul, 30.10.39 (first squadron victory of W.W.2). Destroyed in crash landing, Vassincourt, 23.11.39 (Sgt. Plt. Clowes safe). Watts Propeller.

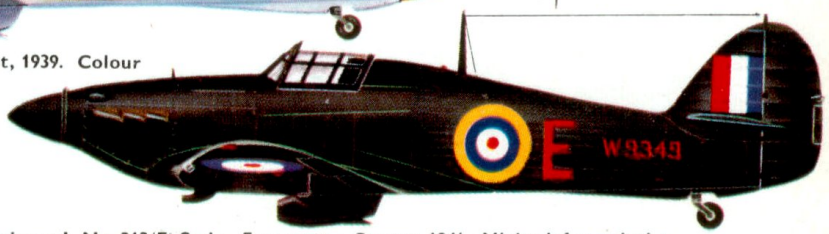
Hurricane I, N2532, of No. 32(F) Squadron, Biggin Hill, Battle of Britain, July 1940. Flown by Sqdn. Ldr. J. Worrall, D.F.C., damaged four Bf 109E's during convoy escort, Dover, 18.00 hours, 20.7.1940. Rotol Propeller.



Underside of replacement aircraft, No. 1(F) Squadron, France. Typical aircraft was N2358. Grey "Z" well aft of roundel. D.H. Propeller.



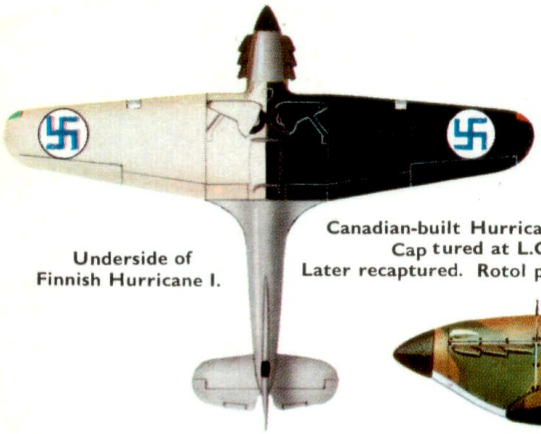
"Collie's Battleship". First Hurricane I, L1669, in Middle East, 1939. Colour scheme applied 1940, No. 80(F) Sqdn. As flown by Fg. Off. M. T. St. J. Pattle. D.H. Propeller.



No. 80(F) Sqdn. fin marking.

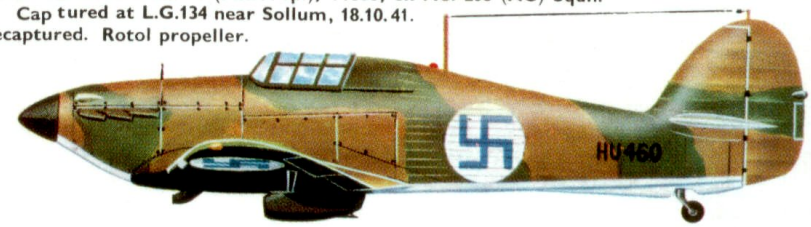
Hurricane I, No. 213(F) Sqdn., Famagusta, Cyprus, 1941. Night defence duties. Rotol propeller

© JAMES GOULDING



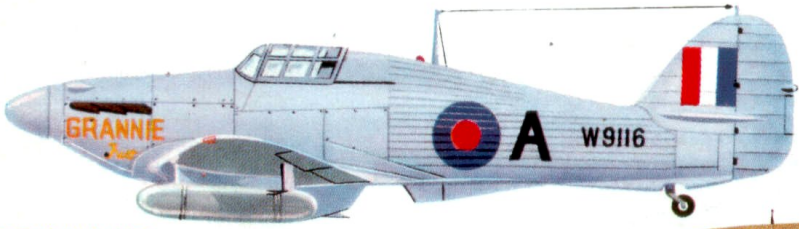
Underside of Finnish Hurricane I.

Canadian-built Hurricane I (P.R.Trop.), T9536, ex-No. 208 (AC) Sqdn. Cap tured at L.G.134 near Sollum, 18.10.41. Later recaptured. Rotol propeller.



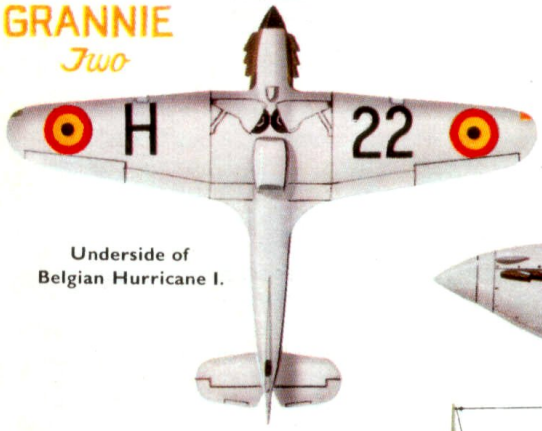
Finnish Hurricane I in delivery scheme, winter 1940. D.H. prop.

South Africa.



Hurricane I (P.R.), W.9116, No. 2 P.R.U., Heliopolis, June 1941. Lost over Benghazi, 3.10.41. No guns; three 14-in. cameras in rear fuselage. Rotol prop.

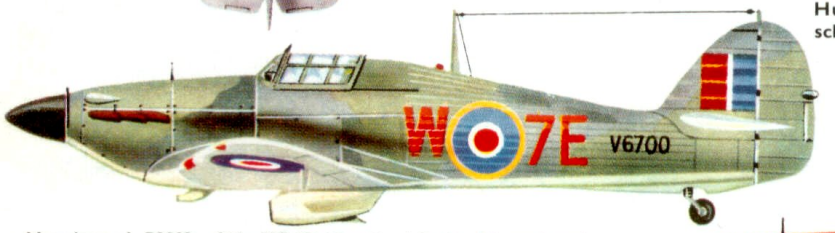
Hurricane I trainer, L1873. C.F.S., Upavon, 1940.



Underside of Belgian Hurricane I.

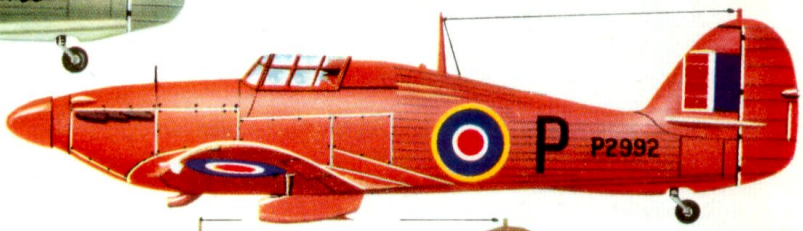
Persia.

Hurricane I, L1582, used for over-sea experimental colour schemes, Brooklands and Farnborough, 1940. Dazzle scheme later extended to undersides.

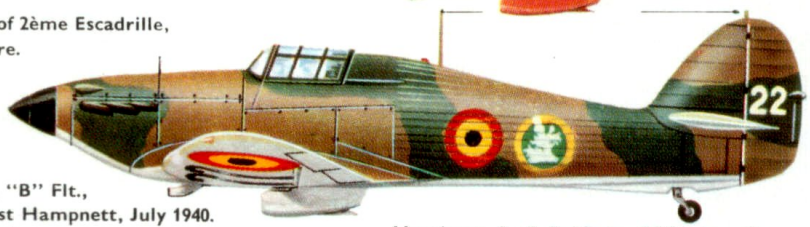


Sea Hurricane Mk.IA, V6700, Lee-on-Solent; converted from Mk.I. Rotol prop.

Hurricane I, P2992, of No 527 (Calibration) Sqdn., Hornchurch, 1943. Used for gun calibration, Thames forts, and Type I radar at Stoke Holy Cross, Orby and High Street. Doped with high-reflectivity paint. Rotol prop.



Fuselage emblem of 2ème Escadrille, Avi.Belge Militaire.



Rumania.

Hurricane I, P3221, of No. 145 (F) Sqdn., "B" Flt., flown by Sqdn. Ldr. A. H. Boyd from West Hampnett, July 1940. Special "blister" hood; not approved by Air Ministry. (Courtesy of Eric Marsden, Esq.).

Hurricane I of Avi.Belge Militaire, 2ème. Escadrille, 1ère Group, 2 ème Regiment de Chasse, Diest, Belgium 1940.

Poland (one aircraft only).

Eire.

Yugoslavia.

Participants in the Russo-Finnish war of 1939-40 were Hurricane I's exported from Maintenance Units in the U.K. in 1940. The camouflage schemes were standard A or B above, black under port wing, white under starboard and silver under fuselage. The Finnish swastika was applied over the R.A.F. roundels above and below the wings and fuselage and HU (Hurricane) serial applied in the Finnish convention. The tailwheel was replaced by a snowshoe tail skid.
(Photo: via Mikko Leutola)

Pictured here, it is believed for the first time, is a Finnish Hurricane I in Continuation War colours; these included black/green camouflage, yellow nose, yellow fuselage band and wing tips and black spinner. The numeral "1" on the rudder is unexplained.
(Photo: via C. Shores)

troops at Rombaksfjord.

R. A. F. participation was however "too little, too late" to influence events in Norway, and on 7th June the Squadron was ordered to destroy its aircraft and return to the United Kingdom. Cross pleaded to be allowed to call for volunteers to return home with his Hurricanes aboard H.M.S. *Glorious*, and although the feat of "landing-on" was new to the pilots, ten Hurricanes and ten Gladiators successfully embarked for the homeward voyage. The following day, however, *Glorious* ran in with the German warships *Scharnhorst* and *Gneisenau* and within two hours the great carrier had disappeared beneath the waves, taking with her all the Hurricanes and Gladiators; only Sqdn. Ldr. Cross and Flt. Lt. Jameson of No. 46 Squadron survived from the R.A.F. contingent, to be picked up after three days on a raft in Arctic seas.

THE FEW IN BATTLE

The Battle of Britain was almost lost before it opened. The R.A.F. had lost 477 fighters in France and over Dunkirk; another 198 had succumbed in Norway, at sea and the home front since 1939. One-fifth of its peacetime professional pilots were already dead or *hors de combat*. Yet by supreme efforts in training, expansion and reorganisation, almost all the necessary fifty-two squadrons calculated for the marginal defence of Britain were ready when the first waves of German bombers were launched against these shores. But fifty per cent. of the pilots facing them had never heard a shot fired in anger.

Hurricanes of No. 145 Squadron fired the first shots of the Battle of Britain proper, which is recorded as having opened on 8th August 1940 (though the planned German assault was delayed until the 13th). Later on the same day Hurricanes of Nos. 43, 145, 238 and 601 Squadrons intercepted raids on the South Coast by escorted Ju 87's, destroying eight enemy aircraft but losing three of their own number. At the same time an attack on a convoy in the Thames estuary was met by Hurricanes of Nos. 32, 56, 85, 151, 501 and 605 Squadrons, this time shooting down six of the enemy for the loss of six.

On that day, 8th August, the strength and disposition of R A.F. Fighter Command was as follows:

AIRCRAFT	SQUADRON	BASE	SERVICE-ABLE STRENGTH
No. 10 Group (South-West Area)			
Hurricanes	No. 87 (F)	Exeter	20
Hurricanes	No. 213 (F)	Exeter	20
Hurricanes	No. 238 (F)	Middle Wallop	19
Spitfires	No. 92 (F)	Pembrey	18
Spitfires	No. 152 (F)	Warmwell	17
Spitfires	No. 234 (F)	St. Eval	20
Spitfires	No. 608	Middle Wallop	16
Blenheims	No. 604	Middle Wallop	12
Gladiators	No. 247 (F) (One Flight only)	Roborough	8
No. 11 Group (South-East Area)			
Hurricanes	No. 1 (F)	Northolt	18

G-AFKX (*previously* L1606 *of No. 56 (Fighter) Squadron*) *was used extensively by Hawkers for flight development of the Rotol constant speed propeller during 1939. It was originally purchased from the Air Ministry as a demonstration aircraft but soon after the outbreak of war was camouflaged and acquired diminutive pale grey registration letters.*
(Photo: Hawker Aircraft Limited Neg. No. 54P)

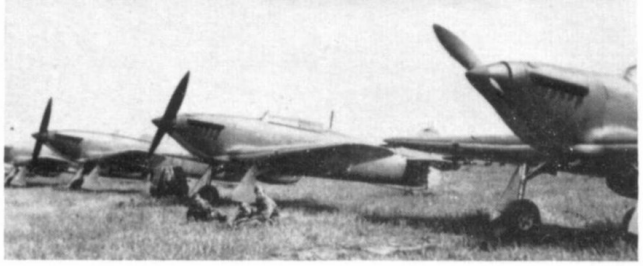
Hurricanes	No. 17 (F)	Debden	19
Hurricanes	No. 32 (F)	Biggin Hill	17
Hurricanes	No. 43 (F)	Tangmere	19
Hurricanes	No. 56 (F)	Rochford	22
Hurricanes	No. 85 (F)	Martlesham	21
Hurricanes	No. 111 (F)	Croydon	18
Hurricanes	No. 145 (F)	Westhampnett	16
Hurricanes	No. 151 (F)	North Weald	19
Hurricanes	No. 257 (F)	Northolt	18
Hurricanes	No. 501	Gravesend	19
Hurricanes	No. 601	Tangmere	16
Hurricanes	No. 615	Kenley	16
Spitfires	No. 41 (F)	Hornchurch	17
Spitfires	No. 54 (F)	Hornchurch	18
Spitfires	No. 64 (F)	Kenley	15
Spitfires	No. 65 (F)	Hornchurch	18
Spitfires	No. 74 (F)	Hornchurch	17
Spitfires	No. 610	Biggin Hill	15
Blenheims	No. 25 (F)	Martlesham	15
Blenheims	No. 600	Manston	13
No. 12 Group (Midlands)			
Hurricanes	No. 46 (F)	Digby	18
Hurricanes	No. 73 (F)	Church Fenton	15
Hurricanes	No. 229 (F)	Wittering	19
Hurricanes	No. 242 (F)	Coltishall	18
Hurricanes	No. 249 (F)	Church Fenton	17
Spitfires	No. 19 (F)	Duxford	19
Spitfires	No. 66 (F)	Coltishall	17
Spitfires	No. 222 (F)	Kirton	17
Spitfires	No. 266 (F)	Wittering	17
Spitfires	No. 611	Digby	17
Spitfires	No. 616	Leconfield	16
Blenheims	No. 23 (F)	Collyweston	15
Blenheims	No. 29 (F)	Digby	14
Defiants	No. 264 (F)	Kirton and Ringway	14
No. 13 Group (The North)			
Hurricanes	No. 3 (F)	Wick	20
Hurricanes	No. 232 (F)	Turnhouse	19
Hurricanes	No. 232 (F) (One Flight only)	Sumburgh	6
Hurricanes	No. 245 (F)	Aldergrove	20
Hurricanes	No. 253 (F)	Turnhouse	20
Hurricanes	No. 504	Castletown	19
Hurricanes	No. 605	Drem	20
Hurricanes	No. 607	Usworth	19
Spitfires	No. 72 (F)	Acklington	16
Spitfires	No. 79 (F)	Acklington	17
Spitfires	No. 603	Dyce & Montrose	14
Blenheims	No. 219 (F)	Catterick	13
Defiants	No. 141 (F)	Prestwick	12

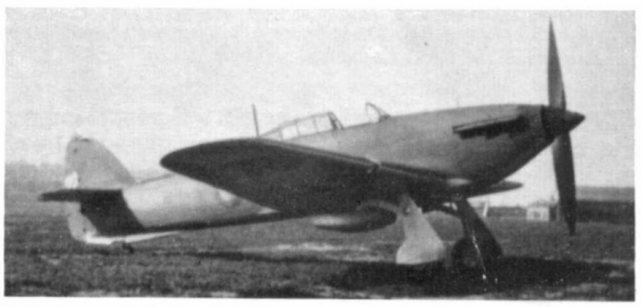
From this table it can be seen to what extent reliance was placed upon the Hurricane. On account of its known performance inferiority to the Spitfire and Bf 109E it was, where possible, committed to the interception of enemy bomber formations, while Spitfires tackled the escorting fighters (if any). Often however this planned division of our fighter force could not be achieved, and in instances where Hurricanes attacked escorted bombers they seldom emerged unscathed.

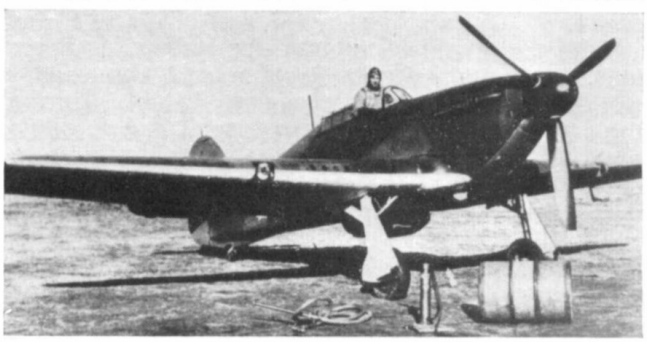
Perhaps the exception to this was the apparent failure of the much vaunted Bf 110 upon which the *Luftwaffe* relied as a long range escort fighter. There were numerous instances during 1940 when Hurricanes split to attack both bombers and the escorting 110's and met with equal success against both.

The air actions of 15th August were outstanding for the defences. All three enemy air fleets were flown against Britain, *Luftflotte 5* operating against the North East in a belief that all defending fighters had been drawn off to meet the cross-Channel threat. A force of about fifty Ju 88's ran into No. 73 Squadron whose pilots shot down half a dozen without loss. Further south, raid after raid was reported by radar, so that almost every Hurricane squadron flew into battle. This was the day that justified the Hurricane, for this was Germany's heaviest attack yet and the Hurricane was committed to fight exactly as it had been intended—from home bases, on all fronts—and was not lacking.

On the following day the weight of attacks was maintained and in meeting one of these a Hurricane pilot's gallantry earned the Victoria Cross—the only such award ever made to a Fighter Command pilot. Flt. Lt. J. B. Nicholson of No. 249 Squadron was leading a section to intercept a formation of Bf 109's





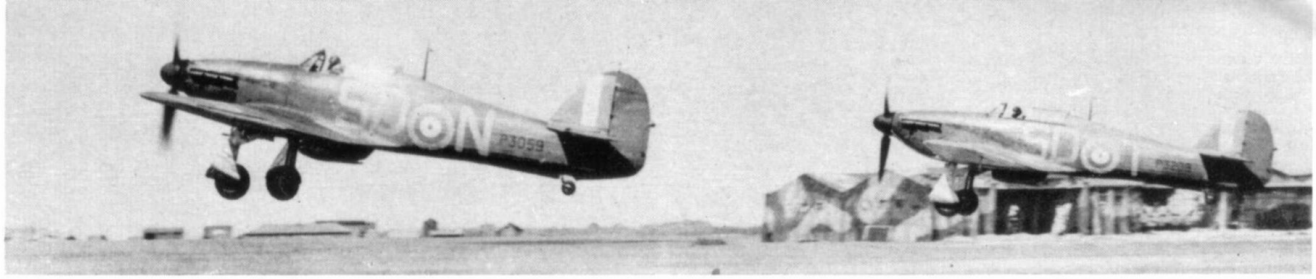


The Belgian Hurricane I's based at Schaffen at the time of the German invasion of May 1940 were almost certainly all British-built, though two licence-built aircraft are known to have been completed. These photographs are interesting in showing individual exhaust stubs (six per side) on some aircraft, but scarcely visible under the wings are the individual aircraft numbers (e.g. H under starboard wing and 22 under port, in five-foot deep characters). It is not known for certain whether the thistle emblem was carried by the 2 ème Escadrille *in combat.*

(Photos: Major M. C. Terlinden, Avi. Belge Militaire)

over Southampton when he was bounced by a number of Bf 110's. Nicholson's aircraft was hit by four shells, two of which struck the pilot and a third ignited the forward fuel tank. As Nicholson prepared to abandon the blazing Hurricane, he caught sight of a 110 which had evidently overshot. Remaining long enough in his cockpit, the badly wounded pilot brought his sights to bear and, firing a long burst, destroyed the enemy. Nicholson baled out and survived—despite being fired on by an over-enthuiastic member of the local defence force.

Space does not permit a detailed account of the course of the Battle of Britain, nor even of the Hurricane's part. However the attack upon the Hurricane's home factory at Brooklands on 4th September (the subject of the combat report at the beginning of the narrative) is interesting in several respects. In looking more closely at the enemy force involved, it is almost certain that the enemy formation was part of *Erprobungsgruppe 210* based at Valenciennes/Denain, an experimental unit charged



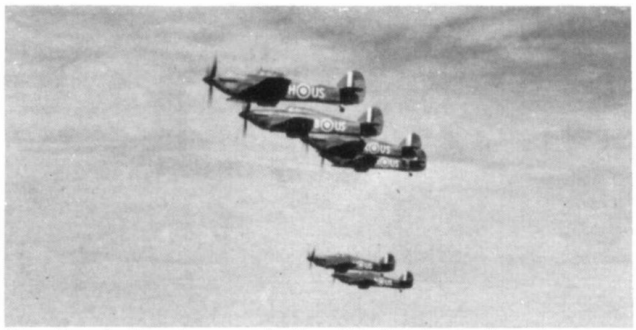
P3059 *and* P3208 *of No. 501 (County of Gloucester) Squadron scrambling from Gravesend on 15th August 1940. Despite camouflage the hangers in the background had suffered hits by German bombs a day or so earlier.*
(Photo: Imperial War Museum Neg. No. HU3093)

with the task of developing the Bf 110 as a bomber; the outstanding success of the Hurricane squadrons on this occasion was therefore almost certainly attributable to a lack of familiarity with heavily-laden aircraft on the part of the German crews. On the other hand it is intersting to observe that the Brooklands factory was likely to have been the "briefed" target, that an important experimental unit was sent against it, and, despite Fighter Command's growing air superiority, that *Erpr.Gr.210's* crews penetrated to their target, apparently without previous interception.

By November 1940 the Battle of Britain as such—that is, the daylight assault intended to so weaken this country as to pave the way to invasion—was over. One final episode remained to be written, and one that—like the opening combat—involved the Hurricane I.

With the arrival of autumn, the Italian Air Force joined the *Luftwaffe* in Belgium and commenced working up for operations against Britain. During the first ten days of November several R.A.F. pilots reported having seen a number of Italian aircraft, but on the 11th of the month, radar in East Anglia reported the approach of a largish force of "bandits" and forthwith four Hurricane squadrons, Nos. 17, 46, 249 and 257, scrambled to intercept the raid. Perhaps something of a sign of the times, the action that followed was not numerically so one-sided as had been commonplace two months previously. Ten Fiat B.R.20's, escorted by about forty C.R.42's and some Bf 109Es, were met by something like thirty Hurricanes. Full and accurate figures for enemy aircraft shot down are not available for this one action, but claims by No. 257 Squadron give some indication of the one-sided nature of the fight: four B.R.20's, three C.R.42's and a Bf 109 destroyed. (Flt. Lt. Blatchford, leading the Squadron in Sqdn. Ldr. Stanford Tuck's absence on leave, ran out of ammunition but went on to "mill" the top wing of a C.R.42 with his propeller.) None of the intercepting aircraft was lost, and the *Corpo Aereo Italiano* never mounted another raid in strength against these islands.

Notwithstanding the mounting daylight superiority



Six Rotol Hurricanes of No. 56 (Fighter) Squadron over Southern England during the summer of 1940. The leading aircraft, US-H, *was already an old aircraft—the thirty-fifth aircraft of the first production batch,* L1581.
(Photo: Associated British Picture Corporation Ltd.)

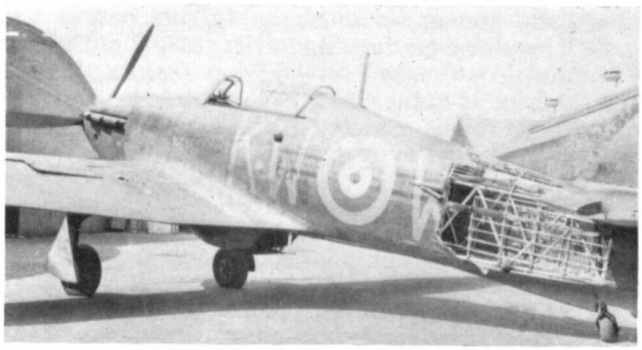
of Fighter Command in Northern Europe in late 1940, the Hurricane I's day was spent, and its place was taken by the Mark II. Night defence by the older aircraft continued for some months, but success (what little there was) was limited to moonlit nights, and so unreliable were communications during those early *Blitz* raids that there was little headway made in preventing heavy damage being done to English cities.

IN WARMER CLIMES

For obvious reasons R.A.F. units overseas were equipped with the latest fighters many months after the first home-based squadrons. This at least held true until late in 1941, and even so tropically-equipped fighters invariably paid dearly in performance in gaining relative immunity from the destructive effects of dust and sand. Though the metropolitan R.A.F. received its first Hurricanes before the end of 1937, the first operational Hurricane I's did not feature in strength returns in the Middle East until mid-1940.

A rare photo of one of the original Hurricane I's shipped to Canada for training purposes in October 1938. 313 *(previously* L1762*) is seen here on a Canadian airfield and still retains the instrument venturi on the fuselage side.*
(Photo: via John W. Caler)

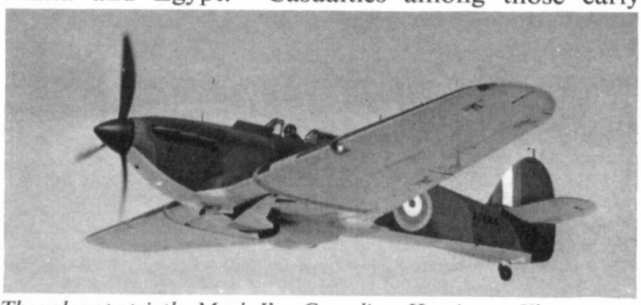
Intimate view showing the refuelling and re-arming of a No. 601 (County of London) Squadron Hurricane.
(Photo: via John W. R. Taylor)



The ability of the Hurricane to withstand severe battle damage is well illustrated by this picture of a 615 (County of Surrey) Squadron aircraft which landed at Kenley after being hit in the rear fuselage by cannon shells and in the wing by machine gun fire. (Photo: F. K. Mason collection)

It was however the knowledge of the effects of dust and sand that resulted in an old Hurricane I, *L1669*, being sent out to Khartoum in 1939 to test the efficiency of a carburettor air filter. When war with Italy broke out on June 10th/11th 1940, this old aircraft was the only airworthy Hurricane available in North Africa, and, on orders from Air Commodore R. Collishaw, *L1669* was flown from landing ground to landing ground in an effort to deceive the *Regia Aeronautica* into believing that a greater number of modern fighters were present in the theatre. Whether the ruse was effective (or even noticed) is not apparent; certainly enemy air activity was light in the opening months of the fight with Italy.

It is not generally known that in fact Hurricanes were being flown from England to Egypt *before* Italy's entry into the war. Small groups were ferried via France (already on the way to partition), Tunisia, Malta and Egypt. Casualties among those early aircraft were high as, despite the use of extra fuel tanks, the pilots were operating at extreme range and were little versed in range flying. It is interesting that at the time of the initial desultory attacks upon Malta in June 1940, Hurricanes were in fact staging through the island. The first four such fighters to join the defending Sea Gladiators actually returned to Malta from North Africa. Later No. 261 Squadron was formed to embrace the defending Hurricanes on the island, though most of the Hurricane I's had by then given way to Mark II's.



Though not strictly Mark I's, Canadian Hurricane X's were so designated to identify aircraft powered by Packard-built Merlin 28s, but were generally similar to metal-wing 8-gun Mark I's. A minor difference, evident in this photo, was the canting-up of the exhaust-shield (normally mounted horizontally on British-built Hurricanes).
(Photo: Courtesy of the National Film Board of Canada, Neg. No. WRM-635)

The first Hurricane squadron established in the Middle East was No. 274 formed in the Canal Zone in September 1940. Unfortunately some of the aircraft, (shipped out from Britain at the height of the Battle when they could least be spared, surviving a tortuous sea journey through the Mediterranean) were found to be useless for day operations as they lacked filters; other temperate Hurricanes were flown up from Takoradi and were virtually worn out on arrival at Abu Sueir. The squadron was not fully operational until 11th November.

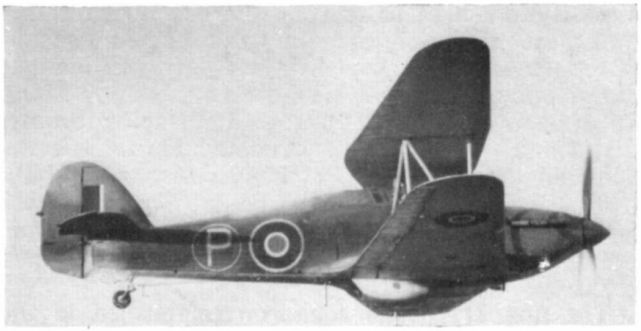
This was the operational and administrative environment surrounding the build-up of British forces in the Middle East. Little wonder that setback followed setback in those early months. By the end of 1940 three squadrons were flying Hurricane I's, Nos. 73 (late of France and the Battle of Britain), 208 (Army co-operation) and 274.

When the Greek campaign opened at the end of 1940 three Gladiator squadrons (Nos. 33, 80 and 112) were sent to support the British Expeditionary Force but, as these aircraft were expected to be of little value if faced by the *Luftwaffe*, Hurricanes were sent to replace them, being first issued to No. 80 Squadron in February 1941; by the end of that month Nos. 33 and 80 together flew sixteen Hurricanes in addition to a few remaining Gladiators. As soon as Germany attacked in the Balkans and Greece became threatened through Yugoslavia, No. 208 Squadron, with Hurricanes and Lysanders, was sent to reinforce the R.A.F. contingent.

During the final days in Greece the Hurricanes were constantly in action and by 19th April there were, spread among the four squadrons, only twenty-two of the fighters airworthy. Sqd. Ldr. M. T. St. J. Pattle, by then promoted to command No. 33 Squadron, so added to his own personal score of enemy aircraft that by the time of his death on 20th April, he had shot down more than 30 enemy aircraft —of which he accounted for twenty-four while fighting in Greece.

Brilliant intelligence and anticipatory action by the

Canadian Hurricanes started to arrive in the United Kingdom during the Battle of Britain. The aircraft below, P5170*—seen here at the Fort William plant of the Canadian Car and Foundry Company—was the first Canadian-assembled Hurricane and first flew on 9th January 1940.* (Photo: Courtesy of the National Film Board of Canada, Neg. No. WRM-620)



One of the original batch of Hurricanes, L1884, *shipped to Canada in 1938 to become R.C.A.F.* No. 321, *later returned to the U.K. and was used by Hill and Sons Ltd. for slip-wing experiments. It was intended that the greater lift available would enable Hurricanes to operate from very small fields and that, once airborne, the top wing would be jettisoned. The ingenious idea was not adopted by the R.A.F.*
(Photo: via James Hall, D.F.C.)

Luftwaffe during the closing stages in Greece wrought havoc with the fighters struggling to cover the evacuation and on several occasions the Hurricanes were caught on the ground between sorties. On the 25th almost all the remaining fighters were bombed at Argos, only seven aircraft subsequently being withdrawn to Crete.

In Crete the story was much the same. No. 208, now without any aircraft, was withdrawn, leaving about a dozen pilots from the other three squadrons to fly a motley collection of Hurricanes, Sea Gladiators, Fulmars and Buffaloes. Despite constant attempts to send reinforcements of Hurricanes to the island, the *Luftwaffe* overwhelmed the defences and the surviving pilots returned to North Africa at the beginning of June.

Meanwhile a slow build-up of Hurricane squadrons had been taking place in Egypt. The Takoradi route was now established and almost all Hurricanes now arriving were equipped for the tropics.

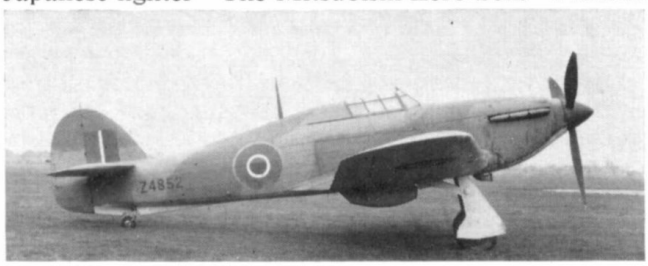
Further outlying campaigns were however delaying the build-up in the Western Desert. When the R.A.F. base at Habbaniyah was threatened by rebellious Iraqi forces, No. 94 Squadron, newly arrived from Aden and under orders to re-equip with Hurricanes, was sent to help in the defence of the garrison. One flight had however received Hurricanes and, equipped with long range tanks, performed valuable reconnaissance over northern Iraq, providing the vital information that modern *Luftwaffe* aircraft (including Bf 110's of II/ZG76) were staging through Mosul on their way to support the Iraqis. As far as is known however the only German aircraft destroyed by 94 Squadron in Iraq were shot down by Gladiators, the Hurricanes being used solely for reconnaissance.

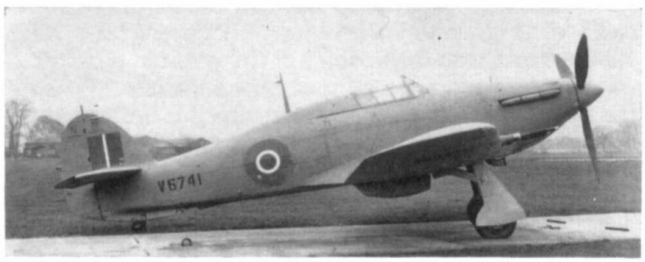
Following the collapse of the Iraqi revolt, three Hurricane squadrons (Nos. 80, 208 and 260) joined in the campaign to neutralise the Vichy regime in Syria and despite a spirited action by Dewoitines and Moranes, the inevitable armistice was signed on 14th July 1941. Subsequent reports showed that the fact that long-range ground-strafing Hurricanes could reach any Vichy base was a major contribution to the decision to surrender.

The arrival of the *Luftwaffe*, equipped with late vintage fighters, in North Africa, brought an end to the Hurricane I's combat value in mid-1941, though No. 208 Squadron continued to fly a variety of photo and fighter reconnaissance versions on well-covered low level sorties for another year. But the cumbersome filters and low-powered Merlin III's bestowed too great a handicap on the old Hurricanes and most were withdrawn for use by No. 4 Flying Training School and other units in the Canal Zone. Others performed the tedious duties associated with weather reporting until they, in turn, were superseded by Hurricane II's.

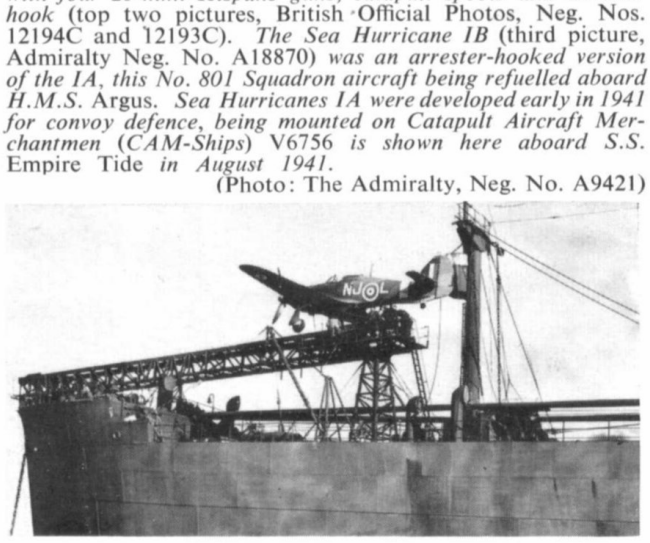
THE FAR EAST

Nowhere and at no time was the Hurricane I placed at so great a disadvantage as in the Far East at the beginning of the War with Japan in December 1941. After all, by European standards it was already obsolete as an operational fighter, yet it was pitted against the best and latest, albeit carrier-based, Japanese fighter—The Mitsubishi Zero-Sen. Without





As the Battle of Britain drew to a close the delivery to the R.A.F. of Hurricane II's commenced and the surplus of Mark I's was allocated to numerous first line duties apart from metropolitan day defence. Perhaps most widely used were the Sea Hurricanes. Broadly speaking the main versions which had originated from the Mark I were the Sea Hurricane IA, with eight machine guns, catapult spools and no arrester hook, and the Sea Hurricane IC, with four 20-mm. Hispano guns, catapult spools and arrester hook (top two pictures, British Official Photos, Neg. Nos. 12194C and 12193C). *The Sea Hurricane IB* (third picture, Admiralty Neg. No. A18870) *was an arrester-hooked version of the IA, this No. 801 Squadron aircraft being refuelled aboard H.M.S.* Argus. *Sea Hurricanes IA were developed early in 1941 for convoy defence, being mounted on Catapult Aircraft Merchantmen (CAM-Ships)* V6756 *is shown here aboard S.S.* Empire Tide *in August 1941.*
(Photo: The Admiralty, Neg. No. A9421)



pursuing all the reasons which placed the Hurricane at this disadvantage—"too little, too late" sums it up—suffice to say that when the Japanese fell upon the Malayan peninsular, not one modern British fighter existed within a thousand miles, the air defence of Singapore being the responsibility of R.A.F. and R.A.A.F. Buffaloes.

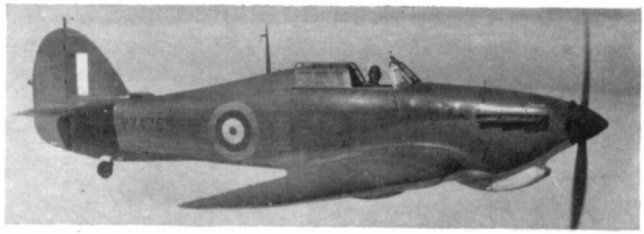
Hurricane I's and IIA Series I's arrived at Singapore on 3rd January 1942 having been diverted from the Middle East, but after putting up a spirited but ineffectual defence, were withdrawn to be thrown into the defence of Palembang and Batavia.

Though no regularly-established squadron of Hurricane I's operated from the islands in the East Indies until No. 605 Squadron flew in to Palembang from H.M.S. *Indomitable* with thirty-three Hurricane I's and IIA's, a number of the older version were among those flown by Dutch pilots and No. 232 Squadron based at Tjilitan and Bandoeng in February 1942, though there is no record of Dutch markings ever having been applied to the British fighters.

After the loss of Singapore, twenty-four other Hurricane I's had been delivered to Tjililitan for use by Dutch pilots under Captain Terluin, and although these were reinforced from time to time, their number was steadily worn down by the tremendous pressure of the Japanese. By the end of the month, almost the entire fighter force had been destroyed—ground losses at Tasikmalaja and Ngoro in heavy raids accounting for almost the last Hurricane. One such aircraft later appeared in Australia, though whether this was a battle veteran has not been determined.

The Hurricane's record in Burma was much the same in outcome, yet operated to better effect—principally due to the less sophisticated enemy aircraft opposing it. Actually most of the Hurricane I's, rushed into Burma in January 1942, were flown in support of, rather than by, an autonomous R.A.F.

p. 7 * *Recounted in his book "THE FIRST AND THE LAST" (Methuen, London, 1955), pp. 44-45.*
p. 9 * *See THE GLOSTER GLADIATOR, PROFILE No 98.*
p. 9 † *Later Air Marshal Sir Kenneth Cross, K.C.B. C.B.E., D.F.C.*



Of all the Hurricane I's which were eventually shipped to the Far East only one is believed to have reached Australia in flying condition, presumably after the fall of Singapore. As far as is known, this aircraft, V7476 *was never allotted an Australian serial.* (Photo: via A. Shennan)

squadron—No. 67—simply because the pressure on pilots and groundcrews was so great as to prevent conversion from Buffaloes during the early retreat. In the event, by the time No. 67 Squadron had withdrawn to the Mandalay area, it was operating an assortment of three Buffaloes, four Curtiss P-40's and about twenty Hurricane I's. When sheer exhaustion of men and machines prevented further combat, the Squadron was withdrawn to Akyab for complete re-equipping and the old Hurricanes were relegated to training duties in India.

It was thus with the Hurricane I, rather than the Spitfire, that Britain fought with her back to the wall during the first two years of the War. True, other fighters—some older, some newer—swelled the strength returns here and there; but Hurricanes went to France and Belgium, Norway and Finland, North, East and South Africa and Greece, Iraq and Syria, Singapore and Burma, and in all those theatres the moral was the same . . . . too little, too late !

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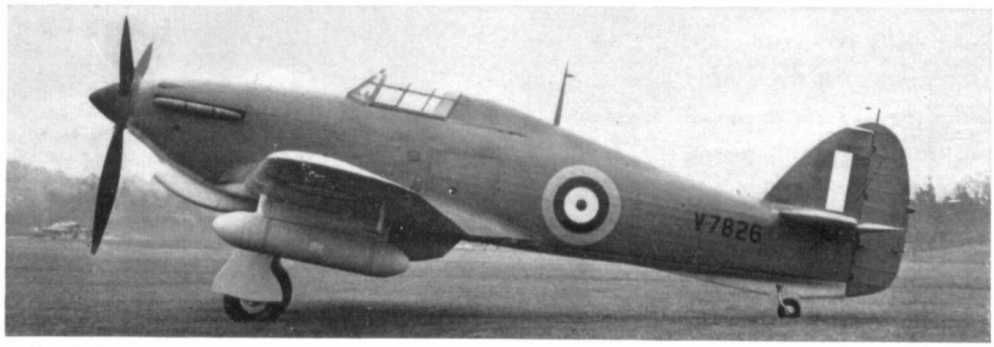
REPRESENTATIVE AIRCRAFT IN R.A.F. SERVICE

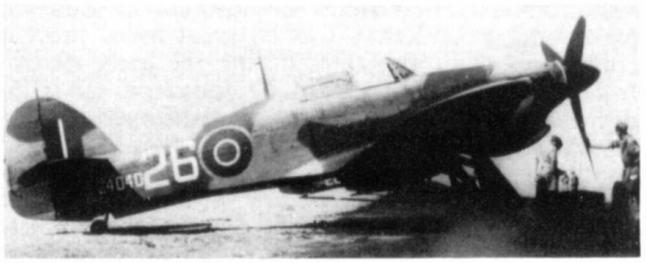
No. 1 (Fighter) Squadron, Vassincourt, France, 10/39: *L1685* (destroyed enemy aircraft, 2/2/40), *N2326*, *P2546*; Northolt, 7/40: *P3044* (missing, 3/9/40), *P3047* (shot down, 15/8/40), *P3172* (shot down, 11/8/40), *P3276* (destroyed Bf 109E, Tonbridge, 1/9/40), *P3395* (ditto), *P3406* (ditto), *P3471* (shot down, 19/7/40), *P3782* (missing, 3/9/40), *V7256* (destroyed Bf 109E, Tonbridge, 1/9/40); Kenley, 1941: *V6932*, *W9151*.
No. 3 (Fighter) Squadron, Biggin Hill, 1938-39: *L1928* (crashed, 29/8/39, pilot safe), *L1973*; Croydon, 1940: *P3143* ("Z").
No. 6 (Figher) Squadron, Helwan, Egypt, 1942: *P3067*, *P3967*, *Z4350*.
No. 17 (Fighter) Squadron, Martlesham Heath, 8/40: *P3467*, *P3482*.
No. 29 (Fighter) Squadron, 1940: *L2080–L2084*, *L2086–L2091*, *L2092* (damaged by enemy action).



Left: *Later Hurricane I's reaching the Middle East in May 1941 were equipped with 44-gallon long-range tanks and carburettor filters.*
(Photo: Hawker Siddeley Aviation Ltd.)

Below: *Early Hurricanes sent to the Middle East during the second half of 1940 were often despatched without tropical sand filters over carburettor intakes with the result that engine lives were extremely short. This section of Hurricanes is interesting in that it shows one of the rarely pictured T-series Canadian Hurricanes; the serial number, chalked on rudder and wing suggests that this aircraft was assembled at Takoradi on arrival direct from Canada; there is also reason to believe that as all these aircraft* (T9530, W9320, W9349 *and* Z4095) *were written off simultaneously at Abu Sueir the picture may have been taken during the tortuous flight across Africa. Chalked on each muzzle port patch are the words* GUNS COCKED.
(Photo: The Imperial War Museum Neg. No. CM849)

After the day Battle came the Blitz, and Hurricane I's were issued to night fighter squadrons (rather than Spitfires which were less popular at night, especially when landing)
(Photo: Imperial War Museum Neg. No. CH2250)



Hurricane I's, relegated to training duties with No. 71 O.T.U. in North Africa in 1943-44, carried large white numerals and serials on the rear fuselage. (Photo: F. K. Mason collection)

No. 32 (Fighter) Squadron, Biggin Hill, 1940: *L1596, L2063, N2406* (P/O Blackford destroyed Bf 109E, 22/5/40), *N2459* (P/O Grice destroyed Bf 109E, 22/5/40, and another 20/7/40), *N2527* (P/O Daw destroyed Bf 109E, 22/5/40), *N2532* (S/L Worrall damaged three Bf 109Es, 20/7/40), *N2582* (P/O Humpherson destroyed Bf 109E, 22/5/40), *N2670* (shot down, 20/7/40), *P2755* (F/L Jeff destroyed Bf 109E, 22/5/40), *P3112* (F/O Humpherson destroyed Ju 87, 20/7/40), *R4081*; Acklington, 10/40: *V6724, V7425.*

No. 43 (Fighter) Squadron, Wick, 1940: *L2066, N2618, P3140, V7257*; 1941: *Z4513* ("U").

No. 46 (Fighter) Squadron, Bardufoss, Norway, 1940: *L1793, L1794, L1798, L1804, L1806, L1812, L1814, L1815, L1816, L1853* (P/O McGregor shot down Ju 88, Tjelbotn, Norway, 28/5/40), *L1892, L1961, L1980, L1988, N2543, N2632, N2633, P2652* (all these aircraft lost either in Norway or in H.M.S. *Glorious* on the return voyage); Digby, 1940: *P3024: V7443* (missing, 10/2/41).

No. 56 (Fighter) Squadron, 1938-40: *L1597, L1606* (later *G-AFKX*), *L1998, N2386, P2857* ("H"), *P3866, V7176* ("P").

No. 71 (Fighter) Squadron, 1941: *V6814* ("C"), *V6919* ("T").

No. 73 (Fighter) Squadron, Caen, France, 9/39: *L1633*; Le Mans, France, 6/40: *L2076, P2571* ("X"); Debden and Hornchurch, 10/40: *P2815, V6857* (shot down, 11/10/40), *V7504*; Bu Amoud and Mersa Matruh, 1941: *V7351* (destroyed Bf 109E over Tobruk, 22/4/41), *T9536, Z4190* (missing, 26/6/41), *AS987, AS990.*

No. 74 (Fighter) Squadron, temporary charge, 1939: *L1581.*

No. 79 (Fighter) Squadron, Biggin Hill, 1939, and Merville, France, 1940: *L1709, N2671. P3122.*

No. 80 (Fighter) Squadron: *P2864.*

No. 85 (Fighter) Squadron, Air Component, France, 1939: *L1644, L1834, P3119* ("X"), *P3124* ("L"); 1940: *P3407, V6611* ("U"), *V6730* ("O")

No. 87 (Fighter) Squadron, 1939-40: *L1777, L1832, P2798* ("A"), *P3755* ("Z"), *V6960* ("E"), *V7646* ("R").

No. 95 (Maritime Reconnaissance) Squadron (Fighter Flight), Freetown, West Africa, 1942: *Z4257* (collided with DC-2, 7/9/42).

No. 98 (Bomber) Squadron, Kaldadarnes, Iceland, 7/41: *Z4607* (crashed, 23/9/41), *Z4702.*

No. 111 (Fighter) Squadron, Northolt, 1938: *L1555* (flown by Sqdn. Ldr. Gillan from Turnhouse to Northolt, 2/38, at record speed); *L1607* (comparative trials with Defiant, 10/39); *L1822* (F/O Ferris shot down four Bf 110s, 18/5/40), *L2051* (shot down by Bf 109E 18/5/40), *L1830* (crash, 24/4/40), *L1973* (F/O Dutton shot down He 111, 8/3/40), *N2340* (S/L Broadhurst shot down He 111, 29/11/39), *P2885* (shot down, 5/6/40), *P2886* (shot down, 13/3/41), *R4183* (shot down, 15/8/40), *P3944* (missing, 15/8/40), *V6538, V7400,* W9112.

No. 116 (Fighter) Squadron: *P3213.*

No. 145 (Fighter) Squadron, 1940: *P3143* ("Z"), *N2583, N2713.*

No. 151 (Fighter) Squadron, 1940: *L1724, L1850, P3065* ("G").

No. 208 (Army Co-operation) Squadron, 1941-42: *N2626; P2638* (Trop. P.R.Mk.I, shot down by 3 Bf 109Fs, 24/7/42); *P3826* (Tac R.Mk.I, Gambut, 1/41); *T9536* (abandoned near Sollum, 18/10/41; recaptured, 5/42); *V7772* (Tmimi, 1/42); *W9328* (Trop. Tac R. Mk.I, Antelat, 1/42); *Z4231* (3-camera P.R.Mk.I); *Z4775* (long range aircraft, Gaza and Ramleh, Palestine, 6/41).

No. 213 (Fighter) Squadron, Wittering, 1940: *L1770, L2062*; Famagusta, Cyprus, 6/41: *W9270* ("A"), *W9290* ("B"), *W9349* ("E"), *Z4089* ("U"), *Z4205* (crashed, 29/12/41).

No. 239 (Fighter) Squadron: *P2949, P2956.*

No. 245 (Fighter) Squadron, 1940: *P2884, P3165, P3152.*

No. 249 (Fighter) Squadron, 1940; the following aircraft in action over Brooklands, 4/9/40: *N2440, P2863, R4229, V6559, V6610* (crashed, 7/9/40), *V6614, V6625, V6635, V7313*; Boscombe Down, 8/40: *P3576* (shot down by Bf 110 over Southampton, 16/8/40. Bf 110 also destroyed; Flt.Lt. Nicholson awarded V.C.), *P3616* (shot down in above combat; P/O King killed).

No. 253 (Fighter) Squadron, 1940; the following aircraft in action over Brooklands, 4/9/40: *N2588, P3032, R2686, V6637.*

No. 257 (Fighter) Squadron, North Weald, 11/40: *P2835* (P/O Mortimer destroyed B.R.20, 11/11/40), *R4094* (missing, 8/8/40), *R4188* (Sgt. Lucas destroyed C.R.42, 11/11/40), *P3578* (shot down, 3/9/40), *P3708* (P/O Henderson shot down (but safe) after destroying two Bf 110s, Clacton, 31/8/40), *V7296* (P/O Pniak destroyed B.R.20, 11/11/40), *V7298* (shot down, 12/10/40), *V7607* (P/O Davey destroyed B.R.20, 11/11/40), *V6680* (P/O Kay destroyed B.R.20, 11/11/40), *V6864* (P/O North destroyed B.R.20, 11/11/40), *V7186* (crashed, 1/1/41).

No. 267 Squadron, Heliopolis, 4/42: *Z4700.*

No. 274 (Fighter) Squadron, Middle East, 1940: *N2498, P2651, P3980, W9269, Z4097*; 1941: *V7820* (destroyed at Mersa Matruh, 12/5/41).

No. 303 Polish (Kościuszko) Squadron, 1940: *P3069* ("C").

No. 310 Czech Squadron, 1941: *V6737* ("R").

No. 335 Hellenic Squadron, Middle East 1942: *W5155, Z4007* (Fuqa, 10/42), *Z4233* (Bardia, 2/42), *Z4604* (Aqir, Palestine; crashed, 15/11/41), *Z4652* (missing, 14/3/42).

No. 401 Squadron, R.C.A.F.: *P3080* ("C").

No. 402 Squadron, R.C.A.F.: *P3021* ("X").

No. 451 Squadron, R.A.A.F., 1941: *Z4231* (Trop, P.R.Mk.I).

No. 501 (County of Gloucester) Squadron, A.A.F., Tangmere, 1/40: *L1659, L2124*; Anglure, France, 1940: *N2329, P2714* ("F"), *P3397, V6799* ("X"), *V7230* ("F"); Battle of Britain: *P3083* ("E").

No. 504 (County of Nottingham) Squadron, A.A.F., Debden and Martlesham Heath, 1939-40: *L1639, L1913* (Intercepted raiders over London, 15/9/40) *N2471, P2725* (Sgt. Holmes rammed He 111, 15/9/40), *P3388, R4178, V6695.*

No. 527 (Calibration) Squadron: *P2992* ("P").

No. 601 (County of London) Squadron, A.A.F., 1940: *P2673* ("N"), *V6808* ("D"), *V7238.*

No. 605 (County of Warwick) Squadron, A.A.F., Drem, 1940: *L2117, N2352, Z4969.*

No. 607 (County of Durham) Squadron, A.A.F., 1940: *P2874* ("F").

No. 610 (County of Chester) Squadron, A.A.F., 1940: *L2115, L2117–L2123.*

No. 616 (South Yorkshire) Squadron, A.A.F.: *L2098, L2101, L2103.*

No. 680 (Photo Reconnaissance) Squadron, Middle East, 1943–44: *P2915, V6747, W9242, Z4604.*

No. 2 Photo Reconnaissance Unit, Middle East 1941: *W9116* (3-camera P.R. Mk.I; missing over Benghazi, 3/10/41), *V7423, Z4182.*

No. 1413 Meteorological Flight, Lydda, Palestine, 1944: *W9155* (Met. (Trop.) Mk. I).

No. 1510 Flight: *N2460.*

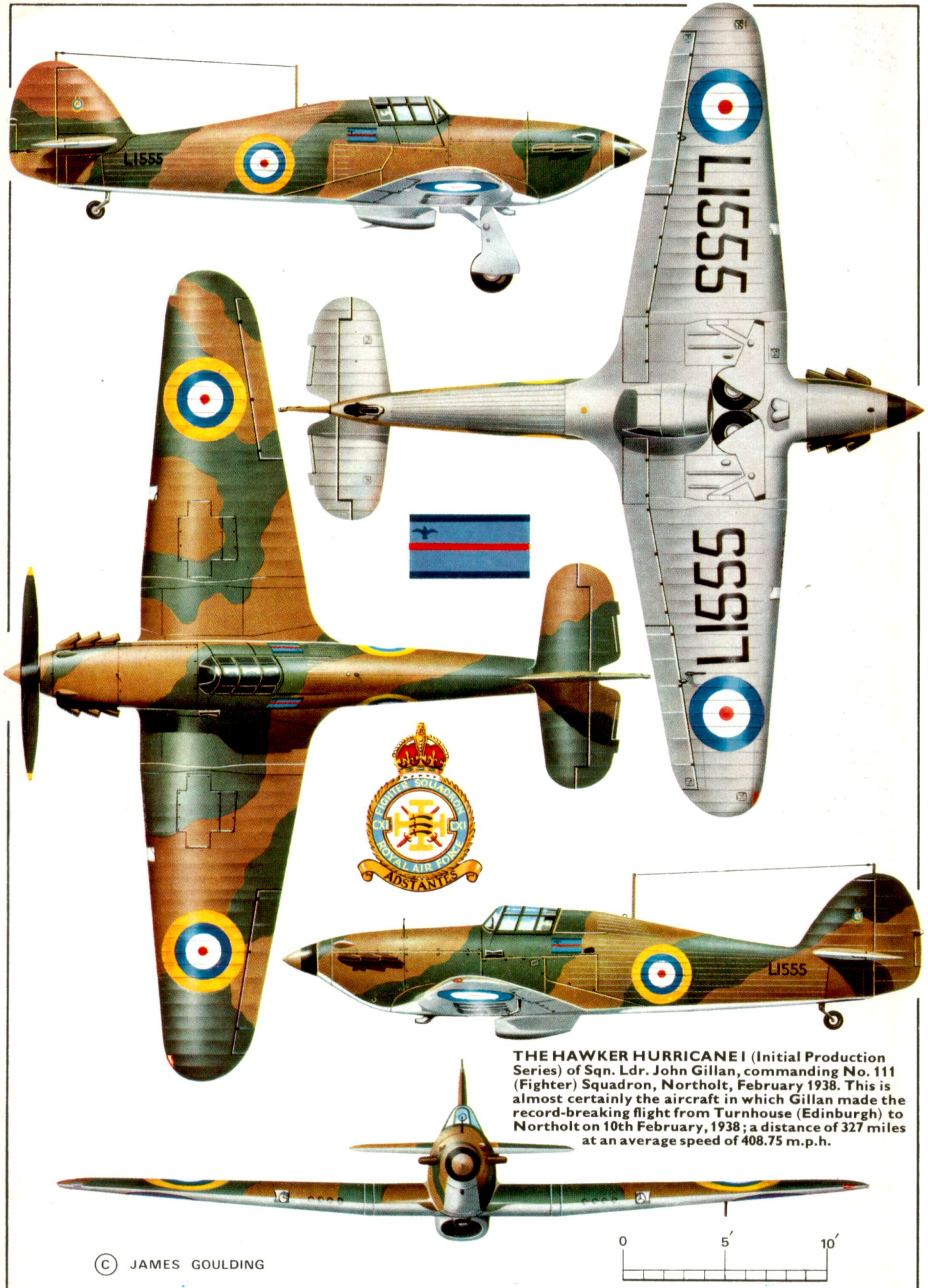
Operation Training Units: No. 55, *N2520*; No. 56: *L2006*; No. 59: *N2555*; No. 71: *Z4855.*

Other R.A.F. Units: *L1683* (Northolt Station Flight); *V7338* (Silloth Stn. Flt.); *L1742* (No. 5 (P) A.F.U.); *N2365* (No. 9 (P) A.F.U.); *V6796* (No. 15 (P) A.F.U.); *P3715* (No. 17 (P) A.F.U.); *L2098* (No. 55 O.C.U., Aston Down, 11/40).

Trials Aircraft: *L1547* (performance and handling, H.A.L.); *L1582* (experimental colour schemes, H.A.L.); *L1669* (first tropical aircraft, A. & A.E.E., and Middle East, 1939-40); *L1696* (slotted wings); *L1750* (trials with two 20 mm. guns under wings); *L1856* (Merlin XII); *P3269* (prototype Hurricane II; Merlin XX; tests with rear view hood); *P3811* (trial 12-gun wing); *W9314* (trial 4-cannon wing); *V7504* (catapult trials, Speke).

No. 208 (Army Co-operation) Squadron was something of a prodigy amongst desert Hurricane units, for this squadron was the first to operate photo reconnaissance and fighter reconnaissance sorties, was one of very few squadrons to display unit insignia on the fuselage (No. 73 Squadron was another) and painted "sand and spaghetti" schemes on the nose and wing leading edges to confuse Italian gunners during low level attacks. This Hurricane P.R.Mk. I (Trop), P2638—a very early aircraft—continued flying until returning from a lone unarmed sortie over the desert on 24th July 1942, was attacked and shot down by three Bf 109F's near Burg el Arab.
(Photo: Imperial War Museum, Neg. No. CM868)

A Hurricane I of No. 1 Squadron, S.A.A.F. operating on the Sudan/Eritrea border in 1941; this aircraft, almost certainly BG997, *displays certain major components cannibalised from much earlier production batches.*
(Photo: Imperial War Museum, Neg. No. CM710)



THE HAWKER HURRICANE I (Initial Production Series) of Sqn. Ldr. John Gillan, commanding No. 111 (Fighter) Squadron, Northolt, February 1938. This is almost certainly the aircraft in which Gillan made the record-breaking flight from Turnhouse (Edinburgh) to Northolt on 10th February, 1938; a distance of 327 miles at an average speed of 408.75 m.p.h.

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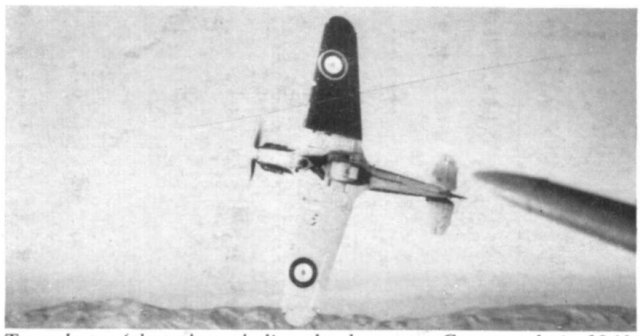

Two photos (that above believed taken over Crete early in 1941, that below over Cyprus) showing variations in the underside, black-and-white demarcation. Other aircraft were geometrically divided down the centreline.

(Photos: Imperial War Museum, Neg. Nos. CM131 (left) and CM1405)

Conversions to Sea Hurricane IA: *N2599, P2970, P3090, V6700, V6801, V6802, V7049, V9313.*

Conversions to Mark IIs (later serials in brackets): *P2682 (DG641), P2970 (DR372), R4081 (DR358), R4218 (BV155*; serviced with 73 Sqdn., El Adem, 2/42), *V6535 (DG630*, served with 208 Sqdn., Burg el Arab, 11/21), *V6538 (DR371), V6785 (BV157), W9191 (DR345).*

Aircraft sold or supplied abroad. To South Africa: *L1708, L1710, L1711*; To Yugoslavia, 1939 (Yugoslav nos. in brackets): *L1751 (1-205), L1752 (2-206), L1837 (3-291), L1838 (4-292), L1839 (5-293), L1840 (6-294), L1858 (7-312), L1859 (8-313), L1860 (9-314), L1861 (10-315), L1862 (11-316), L1863 (12-317)*; To Rumania, 1939: *L2077, L2078, L2085, L2093–L2097, L2104, L2112–L2114.* To Canada (Canadian nos. in brackets): *L1759 (310) L1760 (311), L1761 (312), L1762 (313), L1763 (314), L1878 (315), L1879 (316), L1880 (317), L1881 (318), L1882 (319), L1883 (320), L1884 (321*; later Hillson F.H.40 Slip-wing Hurricane), *L1885–L1890 (322–326), L2021–L2023 (327–329)*; To Belgium (Belgian nos. in brackets): *L1918–L1920 (1–3), L1993–L1997 (4–8) L2040–L2044 (9–13), L2105–L2111 (14–20)*; To Poland, 1939: *L2048 (N2322–N2324, N2327, N2349, N2392–N2395* shipped but diverted to Middle East); Persia, 1939: *L2079.* Yugoslavia, 1940: *N2718–N2729.* Eire (Irish nos. in brackets): *P2968* (107), *V7173* (109), *V7540* (105), *Z4037* (106), *P3416* (108).

PRODUCTION AND SERVICE ALLOCATION

The Hawker F.35/34 Hurricane Prototype: One prototype, *K5083*, built in 1935 under Contract No. 357483/34 to Spec. F.36/34. Merlin C engine. First flight by Flt. Lt. Bulman on 6th November 1935.

The Hawker Hurricane I. Hawker-built.

(i) First production batch, 600 aircraft, *L1547–L2146.* Merlin II engines and Watts 2-blade propellers. Spec. 15/36. Contract 527112/36.

(ii) Second production batch, 300 aircraft. *N2318–N2367, N2380–N2409, N2422–N2441, N2453–N2502, N2520–N2559, N2582–N2632, N2645–N2729.* Merlin III and Rotol or D.H. 3-blade propellers. Spec. 15/36 (Part 2). Contract 751458/38.

(iii) Third production batch, 500 aircraft. *P3265–P3279, P3300–P3324, P3345–P3364, P3380–P3429, P3448–P3492, P3515–P3554, P3574–P3623, P3640–P3684, P3700–P3739, P3755–P3789, P3802–P3836, P3845–P3903, P3920–P3944 P3960–P3983.* Spec. 15/36 (Part 3). Contract 962371/38.

(iv) Replacement batches, 44 aircraft. *P8809–P8818, R2680–R2689* (replacing Belgian deliveries from Contract 527112/36); *T9519–T9538* (production transferred to Canada); *W6667–W6670* (replacing Yugoslav and Rumanian deliveries from Contract 527112/36).

(v) Fourth production batch, 500 aircraft. *V7200–V7209, V7221–V7260, V7276–V7318, V7337–V7386, V7400–V7446, V7461–V7510, V7533–V7572, V7588–V7627, V7644–V7690, V7705–V7737, V7741–V7780, V7795–V7838, V7851–V7862, AS987–AS990.* Contract 62305/39. (195 further aircraft cancelled).

The Hawker Hurricane I. Gloster-built.

(i) First production batch, 500 aircraft. *P2535–P2584, P2614–P2653, P2672–P2701, P2713–P2732, P2751–P2770, P2792–P2836, P2854–P2888, P2900–P2924, P2946–P2995, P3020–P3069, P3080–P3124, P3140–P3179, P3200–P3234, P3250–P3264.* Merlin II and Watts propellers up to *P2681:* Merlin III and Rotol propellers after. Spec. 15/36 (Part 3). Contract 19773/39/C.23a.

(ii) Second production batch, 100 aircraft. *R4074–R4123, R4171–R4200, R4213–R4232.* Merlin III. Contract 19773/39/C.23a.

(iii) Third production batch, 500 aircraft. *V6553–V6580, V6600–V6649, V6665–V6704, V6722–V6761, V6776–V6825, V6840–V6889, V6913–V6962, V6979–V7028, V7042–V7081, V7099–V7138, V7156–V7195.* Contract 857/30/40/C.23a (Part 1).

(iv) Fourth production batch, 200 aircraft. *W9110–W9159, W9170–W9209, W9215–W9244, W9260–W9279, W9290–W9329, W9340–W9359.* (Part 2).

(v) Fifth production batch, 550 aircraft. *Z4022–Z4071, Z4085–Z4119, Z4161–Z4205, Z4223–Z4272, Z4308–Z4327, Z4347–Z4391, Z4415–Z4434, Z4482–Z4516, Z4532–Z4581, Z4603–Z4652, Z4686–Z4720, Z4760–Z4809, Z4832–Z4876, Z4920–Z4939.* (Part 3).

The Hawker Hurricane I. Canadian Car and Foundry-built.

(i) First production batch, 40 aircraft. *P5170–P5209.* Later redesignated Canadian Mark X.

(ii) Second production batch, 100 aircraft. *Z6983–Z7017, Z7049–Z7093, Z7143–Z7162.*

COMBAT PERFORMANCE—TURNING RADIUS

Much has been written of the relative manoeuvrability of the four principal Battle of Britain fighters. Published here for the first time are the comparative turning radii attainable, resolved to a combat altitude of 10,000 feet—the most common area of combat chosen by Hurricane pilots in 1940 . . . . if and when the choice was theirs. True airspeed, 300 m.p.h.

	$C_{L_{max.}}$	$\frac{1}{2}\rho v^2$	Wing loading at half-fuel weight	Available g	Turning Radius
Hurricane I	1·0	170	22 lb./sq. ft.	7·5	800 feet
Spitfire I	1·0	170	24 lb./sq. ft.	7·0	880 feet
Bf 109E	1·0	170	25 lb./sq. ft.	8·1	750 feet
Bf 110C	1·0	170	32 lb./sq. ft.	5·2	1,210 feet

SPECIFICATION

	Prototype K5083	Mark I (Early)	Mark I (Late)	Sea Hurricane IA
Powerplant	Rolls-Royce Merlin C, 1,025 b.h.p. at 3,000 r.p.m. at 11,000 feet, driving 11 ft. 6 in. dia. Watts 2-blade wood propeller.	Rolls-Royce Merlin II, 1,030 b.h.p. at 3,000 r.p.m. at 16,250 feet, driving 11 ft. 3 in. dia. Watts 2-blade wood propeller.	Rolls-Royce Merlin III, 1,029 b.h.p. at 3,000 r.p.m. at 16,250 feet, driving 10 ft. 9 in. dia. Rotol or 10 ft. 8 in. dia. D.H. 3-blade constant speed propellers.	
Armament	Eight forward-firing Browning 0·303-inch machine guns in wings firing outboard of propeller arc, harmonised to converge at 650 yards; this was reduced by 1939 A.M.O. to 400 yards in September 1939, and further reduced to 200 yards range in May 1940; most aircraft loaded with approximately 14 seconds' ammunition supply.			
Dimensions:				
Wing span	40 ft. 0 in.	40 ft. 0 in.	40 ft. 0 in.	40 ft. 0 in.
Length	31 ft. 6 in.	31 ft. 4 in.	31 ft. 4 in.	31 ft. 3½ in.
Height	15 ft. 6 in.	13 ft. 4½ in.	13 ft. 1½ in.	13 ft. 1 in.
Wing Area	—	258·0 sq. ft.	258·0 sq. ft.	258·0 sq. ft.
Loadings:				
Wing loading (at A.U.W.)	22 lb./sq. ft.	22·1 lb./sq. ft.	24·1 lb./sq. ft.	24·1 lb./sq. ft.
Power loading (at A.U.W.)	5·5 lb./b.h.p.	6.0 lb./b.h.p.	6·0 lb./b.h.p.	6·0 lb./b.h.p.
Weights:				
Tare...	4,129 lb.	4,743 lb.	4,982 lb.	—
Loaded	5,672 lb.	6,218 lb.	6,447 lb.	6,589 lb.
Performance:				
Max. Speed at sea level ...	270 m.p.h.	260 m.p.h.	280 m.p.h.	265 m.p.h.
Max. Speed at 10,000 ft. ...	300 m.p.h.	308 m.p.h.	312 m.p.h.	309 m.p.h.
Max. Speed at 20,000 ft. ...	312 m.p.h.	322 m.p.h.	328 m.p.h.	318 m.p.h.
Time to:—				
5,000 ft.	2 min. 20 sec.	4 min. 15 sec.	1 min. 50 sec.	2 min. 30 sec.
10,000 ft.	4 min. 45 sec.	2min. 55 sec.	3 min. 40 sec.	5 min. 20 sec.
20,000 ft.	10 min. 10 sec.	10 min. 35 sec.	8 min. 30 sec.	11 min. 13 sec.
30,000 ft.	22 min. 30 sec.	22 min. 45 sec.	17 min. 40 sec.	20 min. 45 sec.
Max. Range (no reserve)	525 miles	525 miles	505 miles	490 miles
Service Ceiling	33,600 feet	33,400 feet	34,200 feet	32,000 feet
Stalling Speed (no flaps) ...	59 m.p.h.	60 m.p.h.	62 m.p.h.	61 m.p.h.

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